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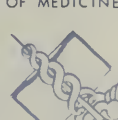
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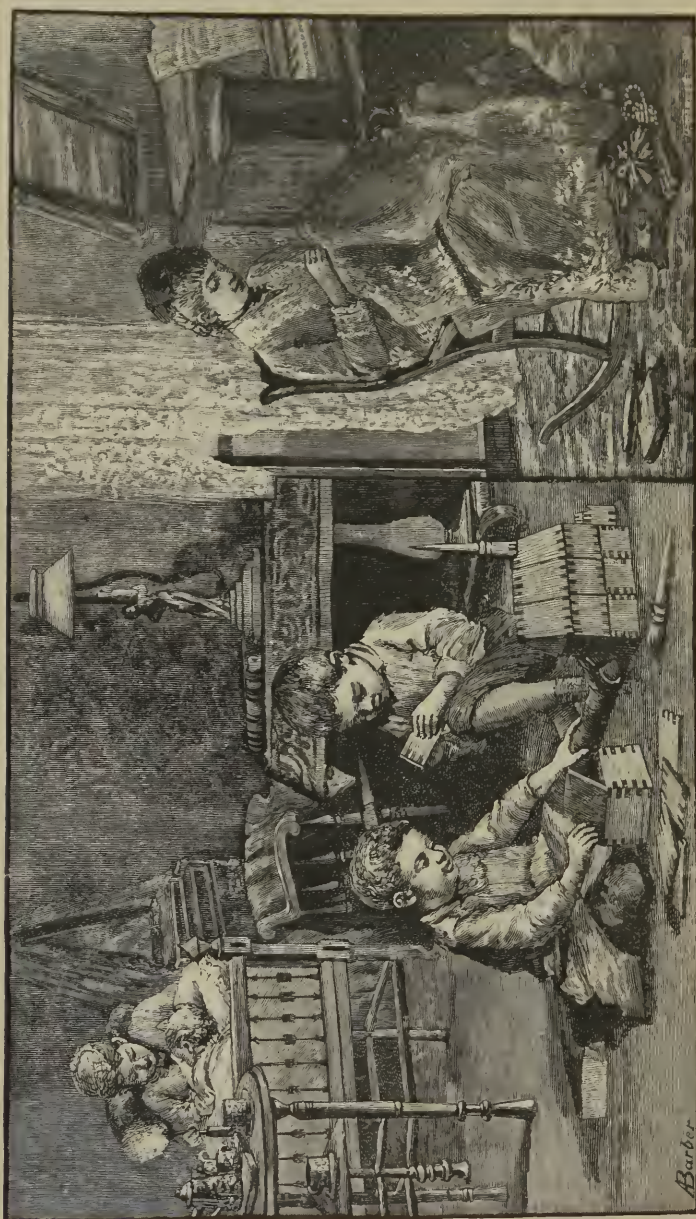
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THE
CARE AND CULTURE

OF
CHILDREN

A PRACTICAL TREATISE FOR THE USE OF PARENTS

BY
THOMAS S. SOZINSKEY, M.D., PH.D.,

AUTHOR OF "THE CULTURE OF BEAUTY," ETC., ETC.



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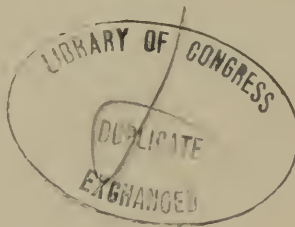
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INTRODUCTION.

HEALTH and strength of body and mind and length of days are justly esteemed as among the greatest and most desirable of blessings. The philosopher, John Locke, begins his excellent book on education with these wise words: "A sound mind in a sound body is a short but full description of a happy state in this world. He that has these two has little more to wish for; and he that wants either of them will be but little the better for anything else." To the sick and infirm life's choicest charms and possibilities are almost unknown; and to those who are cut off in the morning of their years, the best part of existence, the part which should be the richest in pleasure and usefulness, is denied.

It has been established beyond doubt that it is possible for man to live a full century; but how few attain to this age! Less than one per cent. of the deaths (in Philadelphia) are of persons over ninety; and less than twenty-five per cent. are of persons over fifty! But the figures of the mortality in early life are still more striking. One half of all the deaths are of persons under twenty-one; nearly forty-five per cent. are of persons under ten; forty per cent. are of persons under five; thirty per cent. are of persons under two; and nearly twenty-five per cent. are of persons under one!

Now, can it be that an appallingly large number of the young must die? Can it be that the terrible waste of life indicated by the figures which precede is entirely unpreventable? Surely not.

Man's personal welfare is not wholly an affair of destiny. That aged creation of Shakspeare's fancy, Adam, reasoned

correctly when, in congratulating himself on his unusual vigor, he attributed it to the fact that, unlike many others, in his earlier days he

“ Did not with unbashful forehead woo
The means of weakness and debility.”

Mortality is not regarded by people of even average intelligence as beyond control ; and the weekly, the monthly, or the yearly record of it is properly viewed in other aspects than as a text for moral reflections. Sickness is never present without a cause ; and death does not necessarily occur at any fixed time. Knowledge can be “ set up against mortality.” Health and strength may be courted and won ; and the approach of Atropos, the fabled goddess who cuts the cords of existence, can be resisted until life gradually and imperceptibly ebbs away. Mankind admits of cultivation, of fostering, to at least the same extent that any other animal species does ; and the mortality statistics of a people serve to exhibit how successfully the art is practiced. From healthy, strong parents one can look with confidence for healthy, strong children ; and with a due observance of the laws of health all might live until cut off by old age. And in speaking of the laws of health nothing very intangible is referred to ; they bear mainly on the relations of life to food, air, temperature, light, exercise and rest.

Now, if the sickliness of the bulk of children is looked at in connection with the rate of mortality of the whole, it must be painfully evident to any one that it is high time for the institution of an earnest, intelligent search for the cause or the causes of these horrible evils and the means by which they can be lessened, if not removed completely. By the enactment and faithful administration of proper sanitary laws, destructive pestilential diseases such as scarlet fever and small-pox could be, perhaps, completely prevented. Our National, State, and other Governments have, indeed, put in action measures which doubtless do much good ; but although

I believe that important causes of the lamentable defects of the species which are so observable spring from peculiarities in the principles of our civilization which, possibly, cannot be removed by the arm of the law, yet there is enough reason to hold that the production and maintenance of a vigorous population might advantageously receive much more governmental attention than it does anywhere. One must turn back to the Spartan republic to find a government systematically devoted to this purpose. Plutarch says, in his biography of Lyeurgus, the great lawgiver of that remarkable people, that "he resolved the whole business of legislation into the bringing up of youth." Our governments might do a great deal through a scientific plan of education, a plan which would provide for the unfolding of the physical as well as the mental nature. Among the people there is not the widespread knowledge of the laws of health which there might and should be. Our schools do not adequately furnish to the rising generation this kind of information. The value of personal hygiene is not appreciated. Many who are otherwise intelligent know nothing scarcely as to how they are constituted and have their being. Nevertheless, as it is observed by the great philosopher, Bacon, "The knowledge of man, although only a portion of knowledge in the continent of Nature, is to man the end of all knowledge."

The ignorance of parents as to the way to rear their children so that they shall grow up healthy and strong, and have in them the promise of long life, is the cause of innumerable premature deaths, as well as of much vice of character. In his work on the management of infancy, Dr. Combe observes that the young mother "enters on her important charge with less preparation than if it were a plant or a flower that she undertook to manage, instead of a being in whose existence and happiness her whole soul is centered." The statement is, as a rule, just as true to-day as when it was

written. The art of rearing children is not taught to any one ; it is left to be picked up incidentally. On this point the noted English philosopher, Herbert Spencer, in his admirable book on education, says, "Is it not an astonishing fact that though on the treatment of offspring depend their lives or deaths, and their moral welfare or ruin, yet not one word of instruction on the treatment of offspring is ever given to those who will hereafter be parents? Is it not monstrous that the fate of a new generation should be left to the chances of unreasoning custom, impulse, fancy?"

Certain it is that the management of the young is largely accountable for the heavy mortality which prevails among them. As proof of this Dr. Bull, in his book on the maternal management of children, says: "About a century ago the workhouses in London presented the astounding result of twenty-three deaths in every twenty-four under the age of one year! In consequence of a Parliamentary inquiry an improved system of management was adopted, and the proportion of deaths was quickly reduced from 1600 to 450 a year. In these institutions alone, then, there was an annual loss of 1150 lives, clearly traceable to ignorance and mismanagement." I dare say every physician has seen delicate, sickly children become healthy and robust when put under better care. Strong evidence of the existence of a close connection between ignorance and premature deaths is found in the fact that the percentage of deaths during early life of first-born children is considerably greater than that of others. This circumstance is, doubtless, attributable mainly to want of knowledge on the part of their guardians. Assuredly, young wives should become acquainted with the principles of child management, otherwise than at the expense of life. This kind of wisdom is not necessarily acquired only through experience.

The need for reform in the mental state of the people is quite as pressing as in the physical. There are as many

feeble, deformed and diseased in mind, as in body. The faculties of comparatively few are well and harmoniously developed. Let the bent of popular tastes toward frivolity, vanity and things which tend to do anything but ennoble, witness to the truth of this statement! Crowded penal institutions throughout the land speak forcibly of the awful prevalence of law breaking, of crime. In the public press may be found almost daily accounts of depravity of all kinds, in all grades of society. A sincere love of truth, honesty and justice is far from being present in every one's mind.

Now, it is possible to shape the character through a process of training. "As I walked the other day," says a writer in Addison's *Spectator*, "in a fine garden, and observed the great variety of improvements in the plants and flowers, beyond what they otherwise would have been, I was naturally led into a reflection upon the advantages of education, or modern culture. How many good qualities in the mind are lost for want of the like due care in nursing and skillfully managing them! How many virtues are choked by the multitudes of weeds which are suffered to grow among them!" Under a judicious system of education the mind can be moulded and improved to an almost unlimited degree. The principles inculcated in infancy and childhood are felt for life. This has always been regarded as an unquestionable fact. "Train up a child in the way he should go, and when he is old he will not depart from it," is a familiar text of Scripture. Says Plato, "Those who are rightly educated generally become good men."

Let it not be inferred from the remarks which precede that I do not appreciate the power of natural or hereditary peculiarities. It has still been known that bodily traits are transmissible from generation to generation. All children are more or less like their parents in appearance and constitution. Now, just as true is it that mental traits are inheritable. The great emphasis which has been placed on this fact, of late, is

not unmerited. As was said long ago by an acute observer of human nature (Junius), "There are some hereditary strokes of character by which a family can be as clearly distinguished as by the blackest features of the human face." A criminal propensity is as liable to be inherited as a tendency to consumption of the lungs. I think, however, that it is possible to overrate the force of inherited or natural peculiarities. I agree with Plutarch, who, in some excellent remarks on the training of children, says, "If any one thinks that those in whom nature hath not thoroughly done her part may not in some measure make up her defects, if they be so happy as to light upon good teaching, and withal apply their own industry toward the attainment of virtue, he is to know that he is very much, nay, altogether, mistaken. For as a good natural capacity may be impaired by slothfulness, so dull and heavy natural parts may be improved by instruction." The forces at play within the organism are subject to those at play without it. Existence is conditional, and every change in the conditions is followed by a corresponding change in the state of being, one in the direction of an equilibrium. If a person endeavors to perform a large amount of heavy manual labor, his muscular power will tend to grow adequate for the task. Stimulation of the faculties of the mind increases their force. On the other hand any muscle or mental faculty that is not put into action will soon languish. Desirable energies can, and should be, fostered, and undesirable ones suppressed. The regimen or conditions to which children are subjected are hourly telling on them for good or for bad. Yes; good training is all-powerful. Through it, as already remarked, the forming character can be shaped almost at will. Seasonable advice will prevent the development of evil propensities. Like the majority of the wicked, Byron's Lara had none

"To point in time
The thousand paths that slope the way to crime."

Between the body and the mind the relation is so intimate that the care and culture of both should go hand in hand. This is one of the cardinal principles of the art of rearing children properly. From infancy the two sides of human nature should be carefully cultivated. If begun early and systematically practiced, good training would do much for the race. The precepts of it should be familiar to all parents. Ignorance and neglect of them are, as already pointed out, accountable for a large share of the frailty of constitution, the premature mortality, the want of usefulness in life and the crime which prevail. Through the hap-hazard method of rearing children commonly followed, parents too often prepare for their own lips a cup fuller of bitterness than the waters of Marah, for to them children who are defective, in either their physical or mental nature, are more or less of a curse.

In this book I propose to give such information and advice as will serve to enable people to do, in a measure, their duty toward their offspring, from early infancy to youth, the whole period during which they are under parental direction and control. Dividing it into two parts, I will treat in the first of the care of children in health and in sickness, including an account of each of the various diseases with which most of them are apt, at some time, to be afflicted; and in the second, of the systematic culture of children, physically and mentally. I hope the style will be found simple and clear enough, and worthy of the substance of the work, which, in the nature of things, should be interesting to every thoughtful mind. And as that sensible old tutor, Roger Ascham, says of his book on teaching, "I trust good and wise men will thinke well of this my doing; and of other that thinke otherwise I will thinke myselfe, they are but men to be pardoned for their follie and pitied for their ignorance." I know my intentions are right; and may my labors be fruitful of good to my fellow men.

PART I.

THE CARE OF CHILDREN.

SECTION I.

CHILDREN IN HEALTH.

CHAPTER I.

GENERAL REMARKS ON CHILD-REARING.

When in the course of events a child is born, the parents of it are in duty bound to see that it is cared for properly. Thanks to the strong instinctive love of offspring which is inherent in human nature, the reception which it receives is rarely otherwise than kind. Among the fine sentiments expressed by the poetess, Mrs. Norton, is this one—

“Of all the joys that brighten suffering earth,
What joy is welcomed like a new-born child?”

There are, doubtless, some who, unlike the patriarchs of old, do not regard it as desirable to have many descendants, but I fondly believe that there are very few whose hearts are not filled with affection for their infants, and who have not the wish to do all they can to promote their welfare.

Greatly, indeed, does an infant at best require all the care which even parental love can inspire. What a helpless crea-

ture it is! Left to itself it could live but for a few hours. It is utterly dependent. Yet, in it are glorious possibilities. Let it be intelligently and wisely attended to, and it will gradually develop and grow to be, in both physical and mental attributes, the noblest being in the world.

It matters not what the condition of an infant at birth may be, if it is not judiciously cared for it will become sickly, pine, and soon die. On the treatment which it receives during the first year or two, depends, to a great extent, its future prospects. Health, strength, long life and all the qualities and habits which are ennobling, are established in the budding period of existence. Very important, then, are the responsibilities which rest upon parents.

Now, it is exceedingly desirable that parents should, from the start, be firmly resolved to do all in their power for the good of their children. In this both father and mother should be united; for the one should be as much interested in their offspring as the other. They should assist each other in caring for them. But, of course, the proper duties of the one are in the main supplemental to those of the other. That great Roman, Cato the Censor, was scarcely aware of this, for we are told of him, by Plutarch, that when his son was born, "no business, however urgent, except it related to the public, could hinder him from being present while his wife washed and swaddled the infant." Again, both should strive to be always of one mind. What the one approves of should be approved of by the other; and what the one opposes should be opposed by the other. If, when a child is reprimanded, or chastised by the one, he can turn to the other and be encouraged to believe that he has been improperly treated, he will likely become very perverse. Many are ruined in this way.

It is naturally expected of parents that they will exert themselves to procure the means by which their children may

be supplied with the necessaries and, at least, some of the comforts of life, and can receive a fair education. Fortunately, not a great many are inclined to be remiss in this respect. And to see fathers toiling patiently to obtain a livelihood for their little ones, and mothers clinging to them under the most adverse circumstances, makes one feel that humanity is far from being void of splendid traits.

In bringing up children a suitable home stands among the very important things needful. Every family should have a separate house, for it is hardly possible to get along properly "in rooms." But it need be neither very large nor very elegantly furnished. Many of nature's noblemen have spent their early years in very humble cabins. It should, however, be such as will enable its inmates to obtain a plentiful supply of fresh air, and afford them shelter from cold and rain, from "wind and weather." To be sure, it is desirable that it should possess all the ordinary conveniences. There should be a children's room, a nursery, in which they can play and do as they please, without restraint. But I do not desire to convey the idea that it is wise to keep them closely confined to an apartment. Those who spend most of their time in confinement are pretty certain to become delicate. Many are injured thus, through the mistaken tender care of their parents.

A home in the country is much better than one in a city, for children. It affords a better chance, not only to get fresh air, plenty of healthful exercise, and a knowledge of natural things, but to escape forming bad sentiments and habits. I repeat it, the country is better than the city as a place of residence for the young. Indeed, it is better for people of all ages. Goldsmith, in an essay on education, says: "I may be thought whimsical, but it is truth: I have found by experience that they who have spent all their lives in cities contract not only an effeminacy of habit, but even of thinking." The probability of surviving childhood is far less in the city than

in the country. Destructive diseases prevail to a much greater extent in the former. And the greater permanency of the country home is a feature of it worthy of consideration. Most people move from house to house so often in cities that, really, they have no home, no fixed place around which are gathered tender and dear memories. It is a privilege to be born and bred on the same spot of earth where one's ancestors were.

Unless under very peculiar circumstances, parents should, in the main, take care of their children themselves. Unfortunately, a tendency to hand this duty over to others is very prevalent. The mother who does this errs greatly. Such a one does not deserve well of her children. Her highest and holiest function in life is to minister to them. No woman can do anything so ennobling. As Tennyson says—

“The bearing and the training of a child
Is woman's wisdom.”

And one who attends to her children as she should is amply rewarded, for they will prosper under her as under no other. Unless she is very unnatural in her feelings, no one can look after their wants with equal interest and faithfulness. The average nurse does not exert a very beneficial influence over her charge. She may be devoted enough, she may be even intelligent and wise enough, but she cannot have the sympathy of a mother. If she be uncultured, of course, the child will suffer mentally as well as otherwise. For, as Plutarch says, “Childhood is a tender thing, and easily wrought into any shape.” In fact, experience proves that the young tend greatly to become in all respects like those around them. It is well said by Ecclesiasticus, “A man is known by his children.”

In fulfilling the great mission of rearing their children, parents require both intelligence and sound judgment. Every hour,

almost, they will have occasion to put in play all the wisdom they can possess. There can be no set rules for them to follow day after day. The food, clothing, and, in short, the whole mode of life, must be regulated by them largely according to circumstances. Hence they should try to inform themselves fully for the discharge of the duties of their high office. The principal object of this work is to furnish them such knowledge as they will be most apt to require. I would say, then, as is said in the Book of Wisdom, "Receive, therefore, instruction by my words, and it shall be profitable to you."

CHAPTER II.

AIR.

Preliminary Remarks—The Composition of the Air—Relations of Life and Health to the Air—The Air Within and Without our Homes—Personal Emanations, and Home-Air—Excremental Emanations, and Home-Air—Dust, and Home-Air—Lighting, and Home-Air—The Fire, and Home-Air—Heat, and Home-Air—Moisture, and Home-Air—Ventilation—Foul Air, and Diseases—Remarks on Attention to Home-Air.

PRELIMINARY REMARKS.

The relations which the state of the air or atmosphere bear to life and health should be well understood by parents, both on their own account and that of their children; yet I am constrained to say that it is a subject about which the majority of people know very little. It is of the evil consequences of breathing impure air that it is especially important to be informed. In treating of it I will endeavor not only to make manifest its vital bearings, but to point out how to keep the air of our homes healthful. To a brief but comprehensive, and I hope clear consideration of the theme, I invite the careful attention of my readers.

THE COMPOSITION OF THE AIR.

The air is a material thing; it has weight and other properties common to all substances. It is an error to speak of the space around us as empty. We are immersed, as it were, in an aerial ocean, which is about fifty miles in depth, and which presses on the earth as heavily as would a stratum of

mercury thirty inches in thickness, or nearly fifteen pounds to the square inch. A room ten feet square contains from seventy-five to eighty pounds of air.

Nor is the air a simple elementary agent; it is a complicate mixture. Chemical analyses of it show that it always contains nitrogen, oxygen, carbonic acid and aqueous or watery vapor. The relative amount of each of the three ingredients first named does not vary greatly; but the reverse is true of the fourth. The temperature has much to do with the amount of watery vapor which the air is capable of retaining. Thus at eighty degrees it is possible for four times as much of it to be present as at thirty-two; or in other words, saturated air at eighty contains about ten and eight-tenths grains to the cubic foot, and at thirty-two about two and three-tenths grains. This fact should be carefully borne in mind.

There is really an atmosphere of nitrogen, of oxygen, of carbonic acid, and of aqueous vapor. According to a law pointed out by the English philosopher, Dalton, toward the end of the last century, all gases and vapors are self-supporting, and when mixed become uniformly diffused. Were the constituents of the air not inclined to diffuse readily life would be very insecure, as will be shown later.

Of dry air, there are to every seventy-nine parts of nitrogen nearly twenty-one of oxygen, and about one-thirtieth of a part of carbonic acid. By weight there are about four parts of nitrogen to one of oxygen.

NITROGEN is a gas without color, odor, or taste; but though inert generally it is an important element of tissues of the higher class. It was discovered by Dr. Rutherford, of England, in 1722, and found to be a constituent of the air by Lavoisier, the great French chemist, in 1755.

OXYGEN is a gas without color, odor, or taste. It is inflammable, or rather a supporter of combustion, and has a strong

affinity for nearly all the chemical elements, with which it forms innumerable compounds. It plays a vital part in the whole economy of nature. Dr. Priestly, a celebrated English philosopher, who passed some time in this country, discovered it in 1774.

CARBONIC ACID is a gas without color, odor, or taste, and does not burn or support combustion, it being the chief product of such action. It was discovered by Dr. Black, a great Scottish investigator, about 1752.

AQUEOUS VAPOR or steam is so familiar to every one that no description of it is necessary.

Among the casual constituents of the air are: OZONE, an active form of oxygen and an excellent disinfectant; CARBONIC OXIDE, an inflammable gas which is produced in combustion when the supply of air is scanty; MARSH GAS, the chief constituent of illuminating gas; SULPHURETED HYDROGEN, a bad-smelling gas which arises from decaying organic matter; AMMONIA, a gas which arises from decaying organic matter; DUST of various kinds; and ELECTRICITY.

RELATIONS OF LIFE AND HEALTH TO THE AIR.

The relations of life and health to the air are intimate in the highest degree. Put a man or any animal in a vessel from which the air has been exhausted, and death will result almost instantaneously. Between the functions of the animal economy and the air there is a sort of antagonism; a full appreciation of which fact led Bichat, a celebrated French physiologist, in the early part of this century, to define life as "the sum of the functions which resist death." This definition of it is not unlike that of Herbert Spencer, namely: "The continuous adjustment of internal relations to external relations; or, the maintenance of a correspondence between the forces to which an organism is subject and the forces which it resists."

Experiment shows that oxygen is the only constituent of

the air, which is absolutely necessary to support life. Passing into the cells of the lungs, this subtle gas penetrates into the blood, and uniting chemically with carbonaceous and other matter present, thus not only purifies that precious fluid but keeps up the heat of the body. About one-third of the oxygen contained in the air which is inhaled is removed. A person inhales about three hundred and fifty cubic feet of air every twenty-four hours. Breathing air deficient in oxygen will induce drowsiness, torpidity and death.

Nitrogen serves only as a diluent in the air, and the presence of carbonic acid is positively injurious. The last named gas is a product of the nutritive changes going on within the system, and passes out of the lungs with the breath. About fifteen cubic feet of it are exhaled by a person every twenty-four hours. Exercise, liberal eating and other circumstances increase the amount of it cast off. Some comes away by the skin. Air heavily loaded with it will not support life—a fact too often proved by persons dropping accidentally into vessels containing it. The presence of twenty-five per cent. of it would be fatal quickly, and five per cent. of it is dangerous to human life. More than from four to six parts of it to the thousand is decidedly injurious. On going into a room where eight parts or so of it to the thousand are present, a disagreeable full feeling about the head is experienced, the whole system grows languid, and the mind becomes inactive. Similar effects arise from breathing air containing carbonic oxide in far less amount.

The RELATIVE HUMIDITY of the air or its degree of moistness—complete saturation being represented by 100—has an influence on at least the bodily heat, and through it on all the vital processes. The average daily amount of vapor which arises from a person is about a quart. The lower the relative humidity is the more actively does the moisture tend to exhale from the body, from the skin and lungs; and as the evaporation of water is attended with the loss of much heat,

it follows that living in such air tends to depress vital action. This tendency of such air, however, arouses antagonistic activities in the system. Dry, warm air is very debilitating, and very moist air, either cold or warm, but especially the latter, is depressing. Air of a relative humidity of about seventy is, as a rule, the best for health. Expired air is always of a temperature of about ninety-five degrees, and of a relative humidity of over ninety, no matter what its character was when inhaled.

The more nearly normal the air is in composition the more healthful is it likely to be.

The DEGREE OF TEMPERATURE of the air has an important bearing on its healthfulness. The difference in the death-rate at different periods of the year is largely due to differences in the temperature. Considerably over a third more deaths occur in July than in November. Either extreme and sudden variations are trying to the system. The latter are accountable for most cases of inflammatory diseases of the chest and others. Very old persons suffer most from cold, very young persons from heat. Thus, of the deaths of children under two years of age, in Philadelphia, there are over three times as many in July as in October or November; and of the deaths of persons over eighty years, over a third more occur in March than in July.

THE AIR WITHIN AND WITHOUT OUR HOMES.

I need scarcely say that if the air of our homes is different from the air in general, the difference must be due to local causes. Of course, the surrounding air may be contaminated by exhalations of various kinds, and be very unhealthful. No house that is situated where the air is bad can be healthful. If there is foul air all around it there will be foul air within it. It is clear, then, that the SITE of a home is a matter of great importance, so far as health is concerned. I

cannot dwell at length on this matter, but I may say that the best location for a dwelling is on a dry hillside, looking toward the south. But after all, the healthfulness or unhealthfulness of the air of dwellings is very largely within our control.

PERSONAL EMANATIONS, AND HOME-AIR.

Assuming that the site, the drainage and the general construction of our homes are good, the first source of vitiation of the air within them which I will notice is our own presence.

From the skin and lungs there emanate constantly various agents, more or less volatile, most of which are prejudicial to health. Solid particles of the skin are being shed always. From the lungs, with every breath, there issue carbonic acid and organic matter. Air containing from three hundredths to four hundredths per cent. of carbonic acid when inhaled, contains when expired from four to five per cent. If the air of an inhabited room contains over seven parts of the gas to a thousand, the accompanying organic matter is perceptible to the sense of smell. A bottle of expired air, on standing, soon proves by its odor that it contains more than pure air and carbonic acid. In persons suffering from typhoid fever and other febrile diseases, the amount of organic matter given off by the breath is very considerable.

Now, it is evident that if one is shut up in a small, close apartment, the air soon becomes loaded with carbonic acid and organic matter; and not only this, but the proportion of oxygen in it becomes reduced. A lighted candle placed in a large, air-tight glass globe soon goes out, in consequence of the exhaustion of the oxygen present. In an air-tight room six feet square a person could not live many hours. From the data given in this chapter my readers can calculate the time, or very close on it.

In Hufeland's well-known work, "The Art of Prolonging Life," it is said, "The breath of a man is deadly for his fellow-creatures." This statement is, perhaps, over-emphatic, but beyond all doubt a vast deal of injury results from breathing air which has been already breathed. There is reason to believe that this is one of the leading causes of consumption of the lungs. It is the animal matter present which is particularly injurious; a very minute quantity of it is prejudicial to health. It is a wise remark of Benjamin Franklin, that there is "scarcely any air abroad so unwholesome as air in a close room often breathed."

It is, of course, impossible to prevent the contamination of the air around us by the skin and lungs; but by keeping ourselves clean and in a good state of health it can be curtailed.

EXCREMENTAL EMANATIONS, AND HOME-AIR.

The worst personal source of the contamination of the air of homes is connected with the methods of disposal of excremental matter. In the country it may generally be deposited, by all but young children, at a safe distance from the house; but in cities this cannot be done, as a rule.

The CESSPOOL or privy-well is unobjectionable in the country, if it be located some distance from the house, and where the water supply is unaffected by it; but in a compact town or city, it is a dangerous nuisance. With one to every house they may be numerous enough to contaminate, by infiltration, the entire ground, as well as by exhalation, the air. To be sure, it is possible to case a well so that leakage is impossible; but even good casing is not apt to be retentive of liquids long.

The EARTH-CLOSET and allied arrangements should not be thought of for general every-day use. Like disinfectants, they may serve a useful purpose occasionally, but on the whole it

would be just as well if they were unknown. Anything in a house which is liable to be made dangerous by a little neglect should be done without, if possible.

The WATER-CLOSET is the most popular device now in use in towns and cities, with sewers, and in which the houses are supplied with water, for disposing of excremental matter. The matter is washed into the sewers, and by them carried away. But it being necessary to have a large pipe to run from the water-closet to the sewer, gases and the like may pass up through it into the house. This can be prevented. What is called a trap, a peculiar bend or contrivance in which water lodges till forced out by more from above, is placed in the pipe. Should the trap be very shallow and there be much foul gases pent up in the sewer, it will not serve the purpose; gases will find their way into the house. But even though gases do not pass the trap, any matter which may be temporarily in the latter will give rise to foul emanations. A water-trap formed by a tilting bottom attached to the basin of the seat will, in a measure, prevent this from happening. This trap, however, cannot be of great use, because as soon as it is opened the water which flows down the pipe displaces the gases contained therein, which escape into the room. By means of these traps and the use of an abundance of water, I believe it is possible to prevent gases from escaping into the house, save in small amount. The soil pipe may advantageously be continued up to the roof, for the purpose of ventilation, and preferably should open where the air from the kitchen chimney will create a draft in it. Such an arrangement should invariably be present, as it lessens greatly the amount of emanations which are liable to pass into the house.

No man should sleep easy until he is sure that in the water-closet he is not harboring a nuisance in his home, that through it the air he breathes is not transformed into what might be called, in the words of Hamlet, "a foul and pestilent con-

gregation of vapors." And it is well not to rely implicitly on the statement of the average plumber that all is right. The writer is familiar with a fine, new house, which was commended as a model in its sanitary arrangements, in which the air is contaminated, especially in cold weather, in this way: the waste pipe from the bath tub is without a trap, and as it joins the soil pipe, more or less foul air escapes by it, in spite of the fact that there is a ventilating pipe running to the roof. The remedy here is obvious.

Now, as it is nearly impossible to entirely prevent foul gases and other exhalations from escaping from the water-closet, its location in a house should receive attention. One would naturally expect it to be so placed that any emanations from it could not be readily diffused throughout the house. The modern architect, in the fullness of his wisdom, is apt to put it in the very centre of the dwelling. He looks to comfort and convenience; and it is right for him to do so; but it should not be done at the cost of conditions necessary to health.

Many aches and pains may be traced to defective water-closets; and to them may be attributed much of the mortality from typhoid fever, diphtheria, scarlet fever, and many other diseases.

I may state here that any of the pipes which carry the waste water from the different parts of a house to the sewer may give passage to emanations from the latter. With proper traps this need not happen.

DUST, AND HOME-AIR.

The presence of matter which is liable to be diffused in the form of dust, or to undergo decomposition, is a great source of contamination of the air of homes. Some houses are never free from dust and odors, especially about the kitchen and cellar. Such homes cannot be healthful.

Every dwelling should be swept and dusted clean frequently, from top to bottom. Not a particle of matter which is liable to float in the air, or what is worse, undergo putrefactive change, should be tolerated in any human habitation. Smoking tobacco should be forbidden, for breathing the smoke is injurious to health, and tolerating it is pandering to vice.

In using carpets, wall paper, curtains and upholstered furniture, we are favoring comfort or something else, at the expense of health. Wherever something easily kept clean, such as oilcloth or matting, can take the place of carpets, it should be preferred; and for the walls, wood paper, paint, or whitewash should be chosen before paper, which is for the most part very retentive of dirt. Some paper, especially that of a green color, gives off arsenical dust. Curtains and drapery of all kinds might be largely dispensed with, and unupholstered furniture, both handsome and comfortable, can be readily procured. Everything in a house which catches and holds dust of any kind, or is hard to keep clean, is prejudicial in its influence on health.

LIGHTING, AND HOME-AIR.

In lighting our homes the air within them is vitiated. A candle, or coal oil, or illuminating gas, in burning consumes a great deal of oxygen, and throws off as the product of flame a great deal of gas, principally carbonic acid. One cubic foot of gas in burning uses up the oxygen of eight cubic feet of air, and is transformed into about two cubic feet of carbonic acid. I may remark that in combustion nothing is lost; the process is simply a chemical change, attended with more or less light and heat. This doctrine is far from being as new as many suppose; it was proclaimed long ago. Thus, in his work on "Life and Death," Bacon says, "There is in nature no annihilating or reducing to nothing; therefore, that which is consumed is either resolved

into air or turned into some body adjacent." The oil, or whatever is burned for the production of light, merely changes its state and passes into the air of the room. These facts should be carefully weighed by all.

An arrangement by which the products of combustion would be carried out into the open air might be attached to chandeliers and lamps, but there is little reason to hope that this will ever be generally done.

So far as health is concerned, the domestic use of electricity for illuminating purposes would be an inestimable boon. Any one who shall devise a method of using it conveniently and economically for such purposes shall deserve the plaudits of all sanitarians, of everybody, in fact. The light furnished by it through a piece of carbon or of platinum is attended with scarcely any chemical action—it takes nothing from the air and gives nothing save a little heat.

In this connection it is proper to say that plenty of SUN-LIGHT should be allowed to pass into every part of a dwelling every day; for it has a purifying influence on the air. In her excellent work on "Nursing," Miss Florence Nightingale says, "Who has not had occasion to observe the purifying action of light, and especially that of direct rays of the sun, upon the air of a chamber? Enter a room where blinds are always kept closed, and although it may be uninhabited, although the air may not have been tainted by respiration, you are struck with the disagreeable odor of mould which it exhales." Any room which is kept dark constantly is not healthful. It is only during the hot days of midsummer that one is at all justified in excluding the light. And in all hygienically constructed houses every room can receive some sunshine daily.

THE FIRE, AND HOME-AIR.

The fire is a fertile source of vitiation of the air of homes. This subject deserves very careful study.

Now, speaking as a sanitarian, I must say that an entirely unobjectionable apparatus for the consumption of fuel I have never seen; and it is not often that a person is met with who understands how to properly manage even an ordinary stove.

The OPEN FIRE-PLACE is a good arrangement for supplying artificial heat. The chief objection to it is the excessive drafts which it tends to produce. The small amount of heat afforded by it in proportion to the fuel consumed is a serious obstacle in the way of its coming into popular favor in places where coal is used. It is a powerful ventilator.

The great objection to a STOVE is, that more or less of the products of combustion pass from it into the apartment. No difference how well it is constructed, some gas will escape from it, through crevices about the doors and flue, and even through the iron. The upper door of a heating-stove should be kept shut, save when it is necessary to put in a fresh supply of coal; for if it is open the chances are great that gases will escape by it. If the fire burns too fast, less air should be allowed to enter at the bottom door. If a stove is properly designed, and all its parts fit closely, it is possible to limit to any degree the amount of air which enters it. A DAMPER in the flue is of use in regulating the draft, but it requires good sense to operate it properly. Through it gases are often forced out of the stove. I have found that an arrangement by which air can be allowed to enter the flue direct from the room makes a good damper. A small pipe, an inch or so in length, with a close-fitting register in it, carefully joined to an opening in the lower side of the flue, some distance from the body of the stove, enables one to control the draft at pleasure. The little register in the upper door of some stoves, by which the burning of the fire can be regulated, acts on much the same principle, but it is not only more apt to give exit to gases, but is more wasteful of heat.

A stove made of wrought iron, being far less pervious to gas, is preferable to one of cast iron.

From there being more crevices about the COOKING-STOVE and the RANGE than the heating-stove, more gases will escape from them than from the latter. As a rule, these mechanisms consist of far too many pieces and are too loosely put together. In managing them the lid or lids should not be kept off. Yet this is often done; and a very irrational and injurious practice it is. The average individual does not seem to be aware that any gas of any kind can escape from a fire, except when fresh coal is present.

A FURNACE or hot-air heating apparatus being similar in principle to a heating-stove, nothing more need be said of it than that it is a cleaner method of heating. Of course, the utmost care should be taken to see that none of the gases produced in combustion enter the air-pipes.

HEAT, AND HOME-AIR.

A fire produces changes in the character of the air of a room, through the heat afforded by it. The heating effects of it are desired in the colder half of the year, in most places.

Now, to properly regulate the state of the air, as regards heat, of a house, in cold weather, is a difficult matter. By the use of fuel it is easy enough to furnish plenty of heat; but constant attention is required to keep the temperature at or near the same degree. If the air is very warm at one period of the day and very cold at another, the effect on health is bad; it would be better if it were cold all the time. Dr. Armstrong, in his poem, "The Art of Preserving Health," well says—

"Dry be your house, but airy more than warm,
Else every breath of ruder wind will strike
Your tender body through with rapid pains;
Fierce coughs will seize you, hoarseness bind your voice,
Or moist gravedo load your aching brows."

Passing from where the air is highly heated to where it is cold is dangerous to any one, but especially to feeble persons of all ages, and is the exciting cause of many deaths. On the other hand, passing from a very cold atmosphere into a very warm one is just as dangerous. Turning from a room at eighty degrees, or so, into the open air at zero, or even at thirty-two or the freezing point, cannot but profoundly disturb the various functions of the body ; and so of the contrary course. Living constantly in warm air is very debilitating. Multitudes become weak, pine, sicken and die, from this cause. To crave an artificial temperature of eighty or eighty-five is to crave suffering and a premature grave. The highest authorities on the subject in England declare that sixty degrees is the most healthful temperature. In our climate five degrees more might be allowed. At Philadelphia the average temperature of September, the month in which the fewest deaths of all beyond childhood occur, is almost precisely sixty-five.

I may here observe that the sensation of heat or of cold is relative to a high degree. The late Dr. Edward Smith, a philosophical physician of England, writes : "The sensation of air at fifty-six degrees in winter is that of warmth, and equal to that of sixty-five or seventy degrees in summer. The greatest sensation of cold that we ever experienced was in the morning at five o'clock, with the thermometer at fifty-six degrees, in Texas, where we were accustomed to ride under a sun heat of one hundred and fifty degrees during the day."

MOISTURE, AND HOME-AIR.

In heating the air of a house we change its degree of humidity. Here the danger lies in making it too dry. As already stated, the capacity of the air for moisture increases with the temperature. Hot, dry air sucks up moisture very fast. Any one can readily verify this statement by placing a plate of water where the heated air from a furnace will strike

it; and one's head, similarly placed, will dry just as fast. In such air it is hard to keep warm, because the process of evaporation is attended with the abstraction of a great deal of heat from the body. At some distance from the stove or the hot-air register the degree of dryness of the air is much lower, on account of the temperature being lower.

If the temperature of the room is not kept above sixty-five degrees the degree of humidity may not be too low, except close to the stove, or register, and in very cold weather; but when it is kept at seventy and over, there should always be an arrangement for supplying moisture. A plate, or something similar, placed on the stove, or heater, from which the water evaporates that is regularly placed therein, answers in a manner. Attaching a porous vessel to the register of each room in a house heated by means of hot-air from a furnace is a method practiced to some extent, and there is some merit in it. In supplying moisture by either of these methods one is liable to have the air too moist in the colder parts of the room. The right way to do is to furnish sufficient moisture to keep the humidity of the air at a proper point at some distance from where the heat is supplied to the room.

* At Philadelphia the mean relative humidity in September is about sixty-eight.

Breathing dry, heated air debilitates and induces nervousness and irritability. People in general derive more injury from very dry than from very moist air. If breathing moist air were as injurious as some would lead us to hold, the people of an insular country, like England, should furnish an apt illustration; but the English live quite as long as any Continental people, and are relatively strong and healthy. The Constable of France says of Shakspeare's countrymen—

“Where have they this mettle?

Is not their climate foggy, raw and dull?

On whom, as in despite, the sun looks pale,

Killing their fruit with frowns?”

VENTILATION.

I have spoken of the chief sources of vitiation of the air of homes, and pointed out the influence of each. It is very unfortunate that it is impossible to entirely prevent vitiation from going on constantly. The only remedy for unpreventable vitiation is ventilation.

By ventilation is meant the replacing of objectionable by unobjectionable air in a house, or apartment. Very little provision is made for this operation in our dwellings, or indeed in many buildings; it is allowed to occur incidentally, as it may. Were it not that the diffusive tendency of gases is very strong many people would soon kill themselves. It is scarcely possible to find an air-tight room, and consequently one without ventilation is just as rare. The bad air within tends to find its way out, and the pure air without tends to find its way in. Contrary to popular belief, the air of any apartment is nearly alike in composition throughout. Some think that as carbonic acid is heavier than oxygen or nitrogen, it should, in a room, be found almost exclusively near the floor.

The warmer air is the greater is its tendency to rise. Now, warm air can be gotten rid of faster by lowering the sash of a window from the top than by raising the sash at the bottom; but the operation is expedited by having an opening at the bottom as well as the top, one by which the hot air can go out and one by which the cold air can come in freely.

If the air in a room is colder than it is outside—which is sometimes the case—it will tend to go out faster by an opening near the floor than by one near the ceiling.

If a room is provided with two openings for ventilation, one should be near the ceiling and the other near the floor on the opposite side. A very small opening is sufficient to let a great deal of air pass.

In ventilating there should be no perceptible drafts; for

these are injurious to health. Every room of a house, however, should be thoroughly aired for a while every day.

If the system of ventilation is perfect, it is very little difference how much space there is to each inhabitant of a room. A well ventilated small room is much more healthful than a badly ventilated large one. But as the ventilation is rarely very good, it is well to have plenty of space, not less than four hundred cubic feet, to each individual in a bedroom, or any one closely occupied. In hospitals, schools, and other public buildings, from five hundred to one thousand feet should be allowed. In many institutions the allowance is very small; in many schools it is less than one hundred feet.

As there should be supplied to each occupant of a room not less, and preferably more, than two thousand cubic feet of pure air per hour, it is evident that the ventilation should never be neglected. Of course, if there is gas burning in the room, the amount of pure air required by each is proportionately greater.

It has been declared that in large cities fifty per cent. of the deaths are caused by foul air; but this estimate is, doubtless, too high. At any rate, there is sufficient reason for dreading its presence. Drinking impure water is bad, but breathing impure air is worse. Breathing is a continuous operation; so, however slightly the air is tainted, it may surely be expected that the system will suffer. Let every one, then, beware constantly lest, as Cowper says—

“ With his breath he draws
A plague into his blood.”

FOUL AIR, AND DISEASES.

It is not alone in itself that foul air is destructive to life; for it is the chief cause of the prevalence of many diseases. This latter point is of great importance, and will be referred to repeatedly later.

It may safely be asserted that a filthy state of the air has had much to do with the origin and progress of all epidemics. The great plague of Athens, which occurred during the Peloponnesian war, in the year B.C. 430, may be cited as an example. Thucydides, the historian of the time, says: "Those who came in from the country had no houses, but dwelled all the summer season in booths, where there was scarcely room to breathe." The remarks made by Plutarch, in his biography of Pericles, are very suggestive. He says: "A pestilence at that time broke out, which destroyed the flower of the youth and the strength of Athens. And not only their bodies, but their very minds were affected; for as persons delirious with a fever set themselves against a physician or a father, so they raved against Pericles, and attempted his ruin, being persuaded by his enemies that the sickness was occasioned by the multitude of out-dwellers flocking into the city and huddled together, in the height of summer, in small huts and close cabins, where they were forced to live a lazy, inactive life, instead of breathing the pure and open air to which they were accustomed. Of all this he (they affirmed) was the cause, who at the commencement of the war admitted within the walls such crowds of people from the country, and yet found no employment for them, but let them continue penned up like cattle, to infect and destroy each other, without affording them the least relief or employment."

REMARKS ON ATTENTION TO HOME-AIR.

Not only people in general, but many, far too many, physicians, know but little of the relations of aerial conditions to health and disease. As the late Dr. Thomas Laycock, of Edinburgh, says, in his book on medical studies: "Meteorology, in its practical applications, is as important to the medical art as to agriculture or navigation, and no practitioner is complete in practical tact without a knowledge of these

applications." As hinted already, the subject is one which should be well understood by every one. A knowledge of it is of far more value than a knowledge of much that is taught in the schools. Learning a little about it and allied subjects would be of great value to all in passing through life. To any one who has charge of a house, to any wife and mother, it is infinitely more important to know how to keep it healthful than to be possessed of any accomplishment that I can call to mind. For, what is life without health? Ecclesiasticus well says: "Better is a poor man who is sound and strong of constitution, than a rich man who is weak and afflicted with evils." And again, "Better is death than a bitter life, and everlasting rest than continual sickness."

CHAPTER III.

DIET.

Preliminary Remarks—Foods—Remarks on the Selection of Foods—Remarks on Cookery—Eating—The Food and Dieting of Infants.

PRELIMINARY REMARKS.

A sufficient supply of wholesome food is necessary to life and health. One may fast for a few hours, or even days, but it induces debility and sickness.

The necessity for food arises from the chemical and other changes which go on incessantly in the system. The materials of which the body is composed are constantly being replaced, and heat and other kinds of force are being lost, every moment of life. I may here remark that there is but little ground for the popular notion that the body is renewed every seven years. Some glands and other parts are almost entirely renewed every day or two. Bony tissue is the most permanent.

The body is composed of a great variety of materials. Thirteen of the sixty-five or more elements found in Nature are always present in it, namely: carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, chlorine, sodium, potassium, calcium, magnesium, iron, fluorine. The blood, the stream of matter from which all the tissues draw their nourishment, contains about forty different substances. From these statements it is evident that the composition of the food should be somewhat complex.

The manner in which food is digested will be spoken of elsewhere.

Food is drawn from all the kingdoms of Nature, the mineral, the vegetable and the animal. Excepting water, but little

of it, comparatively, is exclusively inorganic or mineral. The whole number of articles used is very great. But, as Dr. Edward Smith says, "although foods apparently differ in the greatest degree, they are very much alike in the kind of nourishment which they afford, so that they are easily classed together, and one member of a class can be taken instead of another. Thus bread, meat and milk have little similarity in appearance and taste, and yet they are made of similar things, and perform the same kinds of duties in the body. Again, fat, starch and sugar seem very unlike each other, yet they are alike in their composition."

It is very desirable, for purposes of study and otherwise, to have a CLASSIFICATION of the different substances used as food. The celebrated German chemist, Leibig, divided them into the nitrogenous, the non-nitrogenous and the mineral. The nitrogenous or albuminous he regarded as flesh-producers; and the non-nitrogenous or fatty, starchy and sugary, he regarded as producers of heat or calorificants. It is now well known that articles of the first class also yield heat and other forms of force, and that those of the second can sustain, to some degree, the muscular energies of the body.

The proximate chemical composition of milk, a fluid which in itself contains all the matter necessary to nourish the body, may be taken as the basis of a classification of essential foods, similar to that of Leibig. According to this plan they are divisible into the albuminous or nitrogenous, the oleaginous (the oils and fats), the amylaceous (the starches and sugars), the saline (the various salts), the acidulous and the aqueous.

Practically, no classification of foods or all substances, whether solid or liquid, which are consumed, can be of great importance. Each article has some peculiarities which call for special notice. I will, then, proceed at once to make a few remarks on each of the several substances which are used extensively, taking them up in alphabetical order.

FOODS.

ALE. See BEER.

APPLES are nourishing to but a slight degree; but they are wholesome and easily digested, when ripe. About eighty-five per cent. of their composition is water, three of albuminous and pectous or gelatinous matter, about ten of starch and sugar, and over one of malic acid. To this acid their sour taste is due. It is very abundant in the unripe fruit, and there is much more of it in some kinds than others.

ARROWROOT now really means simply starch or fecula. Many varieties of it are sold. The true article, which is obtained from the rhizome or thickened underground stem of a tropical plant (*maranta arundinacea*), is very palatable and easily digested. It should never be forgotten, especially by mothers, that it is not at all a flesh-producer.

ASPARAGUS, when immature, is easy of digestion. It contains about ten per cent. of solid, mucilaginous matter, one-half of which is nutritious. The action of the kidneys is, perhaps, slightly increased by it.

BACON or pork which has been salted and dried generally contains from eight to ten per cent. of nitrogenous matter, over seventy of fat, and about fifteen of water. It is not unwholesome, and digests readily if it is well cooked and masticated.

The cured meat of the hind quarters of the animal is called HAM. It is the choicest form of bacon.

BAKING-POWDERS mostly consist of about one part of tartaric acid, one and a half of carbonate of soda, and four of dry starch of some kind, with a little turmeric to give the whole a yellow tint. The presence of water causes the acid to unite with the soda and displace carbonic acid, the agent which causes dough to rise. Some baking-powders contain alum (sulphate of alumina and ammonia), and some bisulphate of potash, instead of tartaric acid. Both of these

articles are decomposed during the process of baking. They tend to whiten bread. It may safely be declared that bread in which a large amount of baking-powder of any kind has been put is unwholesome. YEAST, a substance the body of which consists of minute vegetable organisms, which is produced in beer while fermenting, is preferable to any of the powders for leavening purposes.

The object of using baking-powder, or yeast, is to make bread and the like lighter, and consequently more easy of digestion.

BANANAS contain about five per cent. of nitrogenous matter, seventy-five of water, and the rest of sugar, starch and other elements. Their nutritive value is about the same as that of rice. They are somewhat hard of digestion, but are wholesome.

BARLEY-MEAL consists of a little over six per cent. of nitrogenous matter, nearly seventy-five of starch and allied substances, between two and three of fatty matter, two of salts and about fifteen of water. Hence it is moderately nutritious. Bread made of it is apt to be heavy and difficult of digestion. PEARL-BARLEY, or the grains of the cereal deprived of their husks and rounded by attrition, is of much the same nutritive value as the meal.

BEANS and PEAS contain over twenty per cent. of nitrogenous matter, and are consequently very nutritious. They are deficient in fat, but are rich in salts of potash, lime and soda. When mature they are very indigestible, especially if not thoroughly cooked and masticated, and are apt to produce flatulence. The principal food of the German soldiers during the Franco-German war was a peculiar sausage named the *erbswurst*, which was made of peas-meal or pea-soup, mixed with a certain proportion of lard, onions, etc., and dried so as to be easily carried.

BEEF is the best of all meats, and perhaps more of it than

any other is used. When lean it contains about twenty per cent. of nitrogenous matter and five of salts. In it are found all the elements necessary to support the body. If it be of good quality, and be both cooked and masticated properly, it is easily digested.

Neither beef nor any other kind of meat should be given in large amount to children, particularly if they do not exercise freely. It is to them rather hard of digestion and rather stimulating. Indeed, people in general use too much meat. Locke says, "I impute a great part of our diseases in England to our eating too much flesh and too little bread." This opinion holds to some extent, I think, in most parts of our own country.

When of an average degree of tenderness beef is easier of digestion than VEAL. The latter is rich in gelatinous matter.

BEER is usually defined as being a fermented infusion of malt, flavored with hops. Malt is barley or any cereal which has undergone germination, through which process the starch is converted into a species of sugar. In making beer it is often largely replaced by ordinary sugar, and the hops by other bitters, such as gentian and quassia. I am not aware, however, that any agent used for bittering it is of a more injurious nature than hops. These are narcotizing as well as bitter.

LAGER, ALE and PORTER are simply forms of beer, and are consequently, in the main, alike. The first contains the most hops, and is consequently the most narcotic, but it contains the least alcohol. There is generally more alcohol and less hops in porter than in ale.

The amount of alcohol found in beers varies from two to eight per cent. If taken in large amount they will intoxicate, but the hops have more to do than the alcohol with the production of this effect.

The nutritive value of beer is small; but on account of containing some sugary, saline and other matter, it is greater than that of distilled or spirituous liquors. I believe, however, that its fattening power arises to a great extent from its quieting action on the mental functions.

The use of beer as a beverage is injurious at any period of life, but most so in childhood and youth.

BEETS are rich in sugar, but contain very little nitrogenous matter. They are wholesome and not difficult of digestion.

BLACKBERRIES contain about ninety per cent. of water, four of sugar, and about one and a half of an acid similar to malic. They are cooling. From containing some astringent matter they are slightly constipating.

BRAN is the outer coating of wheat and other cereals. That of wheat and of oats contains considerable nutritious matter, but it is excessively indigestible. A large percentage of all that is eaten passes through the system unchanged. Hence, it tends, in a mechanical way, to relax the bowels.

BRANDY is obtained from wine by distillation. It contains from forty-five to fifty per cent. of alcohol, the ingredient on which its properties depend. See WHISKY.

BUCKWHEAT contains eighty per cent. of starch and about two and a half of nitrogenous matter. The breakfast-cakes made of it are apt to be very indigestible.

BUTTER is formed from the fatty or oily portion of milk. It does not contain any nitrogenous matter, consequently it yields only heat and other forms of force to the system. In nutritive value it does not rank any higher than other fats. When rancid it is unfit for use in any way. The substitute for it called OLEO-MARGARINE, which is prepared from tallow, is not unwholesome. It may not be very agreeable to either the sense of smell or of taste, but it is otherwise unobjectionable, I believe.

CABBAGE, CAULIFLOWER, BROCCOLI, and allied articles are

very similar in composition to the carrot. They are all but slightly nourishing, and are difficult of digestion if not well cooked.

CANTALoupES or MUSK-MELONS contain some sugar, starch, salts and other substances, but over ninety per cent. of their composition is water. Their nutritive value is very small. They are wholesome and may be eaten freely. The action of the kidneys is stimulated by them.

CARROTS contain about one and a half per cent. of nitrogenous matter, fourteen of starch and sugar, eighty-three of water, a little fat and salts. They are less nutritious than potatoes, but are wholesome, and when well cooked are not very difficult of digestion. There is little ground for the belief that they stimulate the action of the kidneys.

CELERY resembles the carrot in composition. It forms a wholesome salad, but when not completely blanched it is possessed of acrimonious properties, and is hard to digest.

CHEESE or the pressed and dried curd of milk consists at first of about eighty-five per cent. of caseine, which is a nitrogenous, highly nutritious principle, twelve per cent. of water, and the rest of fat and lactic acid. On standing, it gains a peculiar flavor from acids and salts of ammonia, which are formed, and the proportion of caseine lessens, while that of fat increases. Many changes which occur in it are produced through the presence of moulds or vegetable growths, and of the larvæ, which are commonly called "jumpers" or "skippers." The poorer and closer kinds of it are extremely indigestible. There is little reason for the popular idea that it promotes the digestion of other articles.

CHERRIES contain about ten per cent. of nitrogenous matter and ten of sugar, besides malic acid and other substances. They are laxative and cooling. Of course, the skins and stones of them should not be eaten.

CHOCOLATE. See COCOA.

CIDER is the fermented juice of the apple, or as Pliny expresses it, "wine of apples." Besides malic acid, which is the main cause of its acidulous taste, and other substances, it contains from five to ten per cent. of alcohol. When pure it is very refreshing, and is altogether one of the most desirable of alcoholic beverages. If taken in large amount it will intoxicate.

CLOVES, like a number of other small, dried berries which are used as condiments, contain a volatile oil of very stimulating properties. It is unwise to use them freely.

COCOA and CHOCOLATE are preparations the basis of which is the roasted and pulverized seeds of a tree (*Theobroma cacao*), of South America. The proportions of sugar, starch, and flavoring agents present in them are very variable. The seeds contain about fifty per cent. of fat (cocoa-butter), eighteen of nitrogenous matter, about one and a half of *theobromine* (a principle which resembles caffeine and theine in properties), and the rest of gum, water, coloring matter and salts.

Either cocoa or chocolate prepared with milk makes a very palatable, mildly stimulating beverage, one which is much preferable to either tea or coffee for the young.

COFFEE or the seeds or berries of a small tree (*Coffea Arabica*), which is largely cultivated in Arabia, South America, and elsewhere, consists of about fifteen per cent. of nitrogenous matter, about one of a peculiar crystalline substance called *caffeine*, an essential oil, and various other elements. Little or no tannic acid is found in it. The amount of it consumed is enormous. It is a decided nervous stimulant. When taken in large amount it produces wakefulness and increases mental power. Very large doses of it cause nervous debility. The use of it promotes the action of the bowels and allays hunger to some extent. As a beverage, it is injurious to children, and it is bad for people of any age, if used very freely.

CORN-MEAL contains about eleven per cent. of nitrogenous matter, sixty-two of starch, eight of oil, one and a half of salts, and the rest of water, gum and other substances. It is an excellent article of diet, but it is not as nutritious as either oatmeal or wheaten flour. It is particularly rich in oil.

CORN-STARCH is far less nutritious than corn-meal. It is a bland article, but should never be regarded otherwise than as a mere auxiliary to more nutritious food. No mother should let her child rely on it as even the chief item of diet.

CONFECTIONERY or sweetmeats are injurious if eaten habitually and largely. Not the least objection to them is, that they are generally used between meals. Preparations of lead, arsenic, aniline, and other poisonous agents are sometimes used to color them. But even if no poison is present in them the persistent use of sugar cloyes the appetite and weakens the powers of digestion. Chocolate is the basis of a good variety. When made principally of cocoanut, walnut, or other kernels, they are more nutritious than if of sugar alone, but are not easily digested. I would add that giving sweetmeats to children whenever craved is bad for them, mentally, as well as physically. One indulgence leads to others.

COTTAGE-CHEESE consists of the curd or cheesy part of milk. It is a nourishing but somewhat indigestible article.

CRANBERRIES are very acidulous. They contain but little nutrient matter. They sharpen the appetite, and if not eaten in excess are wholesome.

CUCUMBERS are extremely indigestible, and contain little nutritive matter. They sharpen the appetite, and being acidulous, are cooling. The liberal use of them is bad for both old and young.

CURRENTS contain about eighty-five per cent. of water, five of sugar, two of malic acid, less than one of nitrogenous matter, and various other substances. Their skins and seeds

are insoluble. They are moderately easy of digestion, and are cooling and laxative.

DATES contain over half their weight of sugar. They are nutritious. In ancient times athletes were in the habit of using them freely.

EGGS are highly important articles of diet. They contain all the elements necessary to form the various tissues of the body. There are in them about fourteen per cent. of nitrogenous matter, ten and a half of fat, one and a half of salts, and seventy-four of water. The white of them contains about twenty and a half per cent. of nitrogenous matter, one and a half of salts and seventy-eight of water.

Hard-boiled eggs are more difficult of digestion than those that are done to a medium degree, especially if they are not thoroughly masticated.

Eggs should constitute an important item of the diet of the young. They are much preferable to meats, for them.

FARINA is the name given to different mealy and starchy preparations. Hence it is of uncertain meaning. This fact should be borne in mind.

FATS and OILS are very similar in composition. None of them contain any nitrogenous matter. Those obtained from animals are easier of digestion than those of vegetable origin. They serve to form fatty tissue, and to some extent, that of nerves, and are very productive of heat and other forces. In the production of energy one part of them is equal to one and three-quarters of starch. Here I may remark that it is now believed that starch and sugar do not produce fatty tissue; it comes from nitrogenous matter. The use of them, however, spares the fat which is in the body.

Many young people dislike fatty or oily substances. Dr. Edward Smith observes: "Children who dislike fat cause much anxiety to parents, for they are almost always thin, and if not diseased, are not healthy. If care be not taken they fall

into a scrofulous condition, in which diseased joints, enlarged glands, sore eyes, and even consumption occur, and every effort should be made to overcome this dislike."

FISH is less nutritious than meat. • It contains nitrogenous matter, fat, salts and water. Most fish, excepting *salmon*, *mackerel*, *herring*, *trout* and *eels*, contain little fat. Salmon is perhaps the most nourishing. All, when fresh, are easy of digestion.

Generally speaking, fish is better than meat for the young. In speaking of its use, regardless of the period of life, Dr. Edward Smith says: "If fish can be obtained as a relish or a change of food it may be both agreeable and useful, but if it be the only animal food, it is insufficient to maintain good health."

FOWLS and BIRDS furnish food which is for the most part easier of digestion, and only a little less nutritious than any of the meats. The flesh of all contains nitrogenous matter, fat, salts and water. The proportion of fat in that of most of them is small.

GAME. See VENISON.

GIN. See WHISKY.

GINGER is complex in composition, and is an energetic stimulant. Through the habitual and free use of it the digestive organs are weakened.

GOOSEBERRIES contain from six to eight per cent. of sugar, from one to two of malic and citric acids, and over eighty-five of water. Their skins and seeds are insoluble. They are cooling and laxative.

GRAPES contain from nine to fifteen, or more, per cent. of sugar, about one of malic and other acids, less than one of albuminous matter, about one half of one of salts, especially potash, and over eighty of water. Their seeds and skins are insoluble. They are somewhat nutritious, and are both diuretic and laxative.

GRITS are more nutritious than either meals or flours, on account of containing a greater proportion of gluten, which is nitrogenous matter. The wheaten and the oaten varieties are the best. The latter is the richer in nitrogenous and fatty matter. Both constitute admirable food for old and young, but especially the latter. In order to have them easy of digestion, they must be well boiled. They are laxative.

HOMINY is wholesome and more nutritious than ordinary corn-meal.

HONEY consists largely of sugar, which it about equals in nutritive value. It is laxative.

HORSE-RADISH is an acrid stimulant. Young people, at least, should abstain entirely from the use of it.

HUCKLEBERRIES or WHORTLEBERRIES are very indigestible, on account of the insoluble nature of their skins, which are generally eaten; but otherwise they are unobjectionable. They are laxative.

ICED-CREAM is, when eaten habitually and in large amount, a fertile source of indigestion. The chilling effect of it stops digestion for a time. The use of it as a dessert is certainly injurious. The addition to it of things such as starch, or chocolate, or strawberries, or peaches, is advantageous.

JELLY made from fruit is somewhat nutritious. That which consists of gelatine, purified and flavored, is of a nitrogenous nature; but there is some reason to believe that the nutritive value of it is small. Dr. Edward Smith says of it: "It is an animal food of valuable qualities, but not so good as meat, and is probably inferior to both fish and egg."

KIDNEYS of sheep and other animals contain from fifteen to twenty per cent. of nitrogenous matter. They are very nutritious, but are too difficult of digestion for delicate stomachs.

LAGER. See BEER.

LAMB. See MUTTON.

LEMONS constitute a useful item of diet. Their rind contains a stimulating, volatile oil and a bitter principle. Their juice contains about two per cent. of citric and a little malic acid. It forms, with water and sugar, a very cooling and agreeable beverage.

LIMES are very similar to lemons, in all respects.

LIVER of the calf and of other animals, including birds, contains about twenty per cent. of nitrogenous matter. It is very nutritive, but not easy of digestion.

MACARONI and VERMICELLI are manufactured from Italian wheat, which is rich in gluten. They are highly nutritious, but are difficult of digestion. Weight for weight they contain over twice as much flesh-forming material as ordinary flour.

MACE. See NUTMEG.

MILK is a model food. The average composition of that of the cow is as follows: Caseine 4.14 parts (by weight), fat 3.08, milk and sugar 4.62, salts .71, water 87.45. The fatty part of it is liable to vary greatly in amount. The caseine is nitrogenous matter. The salts consist mainly of lime, potash and soda.

Milk is very digestible, especially when fresh. On passing into the stomach it is curdled by the gastric juice—a fact which should be noted by mothers. That it is apt to disagree with many, and that it causes constipation, are almost groundless notions. By attempting to live on it alone for a long time a dislike for it may be generated, but I believe there are very few stomachs which cannot readily digest it. It is only apparently constipating. All or nearly all of it being absorbed, one who lives on it largely cannot expect much refuse matter to pass out of the system.

The use of plenty of milk by the young is highly commendable. "Nothing," says Dr. Edward Smith, "would so much tend to save the life of infants and to enable children to

grow up into healthy men and women, as an abundant use of good milk, and nothing would tend more to lessen disease and mortality." These are not ideas of recent origin. Homer pronounces as thrice happy a people of Scythia, the "far-famed" Hippemolgian or mare-milking race—

"Renown'd for justice and for length of days,"

who

"From milk innoxious seek their simple food."

The removal of the cream from milk does not render the latter much less nutritious.

Milk which has become acidulous, and from which the butter has been removed, or in other words BUTTERMILK, is a cooling, nutritious beverage.

MOLASSES. See SUGAR.

MUSTARD is an acrid stimulant, and the use of it, as a condiment by the young is injurious.

MUTTON, when lean, consists of about eighteen per cent. of nitrogenous matter, five of fat, five of salts, and seventy-two of water. It is not as easy of digestion as beef, nor is it as nutritious. LAMB is less nourishing, and is not much easier of digestion.

NUTMEG contains six per cent. of a stimulating, volatile oil. It is unwise to season the food of children highly with it. The aril or inner covering of it as it comes from the tree is called MACE. The general properties of both are alike.

NUTS are nutritious, but are very indigestible. Most of them contain a considerable amount of fatty matter. Almonds, walnuts, chestnuts, hickory nuts, peanuts, and in fact any kind, if eaten freely, will cause indigestion.

OATEN MEAL is very nutritious and wholesome. See GRITS.

ONIONS contain an acrid oil which is possessed of stimulating properties. In boiling them the oil is largely dissipated.

Sugary and mucilaginous elements are present in them in considerable amount, and so is sulphur. They are moderately nutritious and are somewhat diuretic and expectorant.

ORANGES contain less citric acid and far more sugar than lemons, but otherwise the two are very similar. They are very agreeable and wholesome.

PARSNIPS consist of about one per cent. of nitrogenous matter, six of sugar, nearly ten of starch, eighty-two of water, and the rest of oil and salts. They are wholesome and comparatively easy of digestion.

PEACHES contain from one to two per cent. of sugar, from six to eight of albuminous and pectous or gelatinous substances, less than one of malic and other acids, nearly one of salts, and about eighty of water. They are not very nutritious, but are easy of digestion and wholesome. When stewed, and indeed, in any shape, they are laxative.

PEARS contain about seven per cent. of sugar, from three to four of albuminous and pectous substances, about eighty-four of water, a trace of malic acid and less than half of one of salts. They are harder of digestion than either peaches or apples, but are more nutritious.

PEAS. See BEANS.

PEPPER is a powerful irritating stimulant. The red is stronger than the black, but the use of either habitually weakens the stomach. It and most other condiments should be unknown to children.

PICKLES or cucumbers, cabbage, onions, and other articles preserved with vinegar, salt, pepper, and other agents, are much relished by some. Altogether, however, they merit condemnation. The use of them is injurious to all. To children they are little short of poisonous.

PINE-APPLES are agreeable and wholesome, but are not very nutritious. In the raw state they are very indigestible.

PLUMS contain from two to six per cent. of sugar, from

two to five of albuminous and pectous substances, about one of malic acid, half of one of salts, and about eighty of water. They are wholesome. When dried they are called PRUNES. These have always been regarded with favor. In that curious little work, "The Code of Health of the School of Salerno," it is said—

"Prunes cool the body and the bowels move ;
To all in many ways a blessing prove."

PORK that is fat contains about ten per cent. of nitrogenous matter, forty-nine of fat, two and a half of salts, and the remainder of water. It is not very easy of digestion, but it is wholesome. It is more suitable for use in winter than in summer.

PORTER. See BEER.

POTATOES constitute one of the most important articles of diet. The white and the sweet are very unlike each other in composition and properties.

The *white potato* contains about two and a half per cent. of nitrogenous matter, twenty of starch, over one of sugar and gummy matter, a trace of fatty matter, over one of woody fibre, one and a fourth of salts of potash, magnesia, lime and soda, and seventy-four of water. It is deficient in soda, hence it is well to eat some salt with it. Both the nitrogenous matter and the fat are scanty, so scanty that it is far from being a complete food. However, it is very easy of digestion and is wholesome.

The *sweet potato* contains about thirty-two per cent. of solid matter, of which sugar constitutes ten, starch sixteen, nitrogenous matter one and a half, gum one, fat about a third of one, and mineral matter nearly three. It is palatable and wholesome. The nutritive value of it is less than that of the white potato.

PRUNES. See PLUMS.

PUMPKINS and SQUASHES are of little nutritive value, but are wholesome.

RASPBERRIES contain three to five per cent. of sugar, about half of one of albuminous matter, from one to two of malic acid, from a quarter to a half of one of salts, and about eighty-five of water. Their seeds are insoluble. They are agreeable and wholesome, and are laxative.

RADISHES resemble carrots in their composition. Eaten in the raw state they are difficult of digestion, but are not unwholesome.

RHUBARB is somewhat nutritious, and is easy of digestion if properly cooked. It is decidedly laxative.

RICE contains from six to seven per cent. of nitrogenous matter, nearly eighty of starch, half of one of salts, thirteen of water, and a little fatty matter. It is nutritious, but is not in itself a perfect food. When properly cooked it is easy of digestion.

SAGO is simply pure starch. It is easy of digestion.

SALT or chloride of sodium is a necessary article of diet. It is found in all the secretions of the body. The dietetic value of it has been recognized from the earliest times. When eaten in moderate amount it promotes digestion and increases the appetite. It is only when it is eaten in excess that it occasions thirst.

Meat that has been salted, besides being denser, and consequently harder of digestion, is less nutritious than when fresh; but the difference is not so great, probably, as it was formerly held to be. The brine dissolves out some nutritive matter.

SAUCES or appetizing mixtures should not be used by the young otherwise than sparingly, and preferably not at all. The natural powers of digestion should not be forced by any artificial stimulus.

SHELL-FISH are nutritious, but are, generally speaking,

very difficult of digestion. *Oysters* contain fourteen per cent. of nitrogenous matter, and *lobsters* from fifteen to twenty. The former is more easily digested than the latter, as well as *crabs* and *clams*. They are apt to be hardened and rendered tough in the process of cooking.

SPINACH contains but little nourishment, but it is easy of digestion and wholesome.

SQUASHES. See PUMPKINS.

STRAWBERRIES are about as nutritious as raspberries, and are quite as digestible and wholesome. They are altogether a very choice and excellent article of diet.

SUGAR is present in most foods, but particularly in fruits and vegetables, and it is found in great abundance in the juices of the sugar-cane and of the sugar-maple. It is of various kinds and of various degrees of purity. In any form it, as a food, produces only heat and other forces. It is, however, an important article of diet. When eaten in excess it destroys the relish for things less sweet, cloyes the appetite and produces indigestion. I may remark here that through the action of the saliva and the pancreatic secretion, starch is transformed into a species of it, in the process of digestion.

MOLASSES is substantially a solution of impure sugar. It can scarcely be put down as unwholesome, but the use of it in large amount is injurious. It is laxative.

TAPIOCA consists of starch exclusively. It is moderately easy of digestion.

TEA is the dried leaves of several varieties of a shrub (*Thea viridis*), cultivated largely in China, Japan, India, and elsewhere. The black and the green do not differ essentially in composition and properties; they may be and often are obtained from the same plant. The green teas are generally formed from the immature, and the black from the mature leaves. The mode of curing is not alike for both. The former are dried more quickly. Tea contains from less than

one to over four per cent. of *theine*, less than one of a volatile oil, and from ten to twenty of tannin. Gum, resin, various minerals, and other substances are also found in it. Generally speaking more theine exists in black than in green teas, but the reverse is true of oil and tannin.

The stimulating properties of tea are chiefly due to the theine, which is a nitrogenous principle precisely similar to caffeine, its aroma to the essential oil, and its astringency to the tannin.

Tea, as a beverage, should be regarded as a stimulating infusion. It does not contain any nutritive matter, except the leaves are much boiled. The free use of it is injurious, especially to the young.

In preparing tea it should not be boiled, for boiling dissipates the volatile oil and dissolves out a large amount of tannin, which is unhealthful. It is ready for use as soon as the water in which it has been placed reaches the boiling point. Soft water is the best.

The following remarks of Dr. Edward Smith are worthy of attention: "Tea and coffee are both drank so universally that it might be inferred that they are taken indiscriminately; but although some persons prefer tea and others coffee, a selection is usually made, so that coffee is drank at breakfast (as it should be) and tea at the tea meal. As tea tends to increase and coffee to decrease perspiration, the former is more fitted for hot and close weather, when we do not perspire enough, and the latter for cold or any kind of weather when the skin is soft and we too readily perspire."

TOMATOES are somewhat nutritious, and are wholesome. They contain about one and a half per cent. of nitrogenous matter, six of sugar, over half of one of malic acid, nearly one of minerals, over one of fibrous matter, and about ninety of water.

TURNIPS are not of much nutritive value, but are wholesome.

They contain between one and two per cent. of nitrogenous matter, seven of starch and sugar, less than one of salts, and over ninety of water.

VEAL. See BEEF.

VENISON and GAME of all kinds are nutritious and easy of digestion. As a rule, they contain little fat.

VERMICELLI. See MACARONI.

VINEGAR or dilute acetic acid is of doubtful dietetic value. A little of it stimulates digestion. Taken habitually and largely it weakens the stomach and induces general debility and emaciation.

WATER, when pure, is simply a condensed mixture of eight parts by weight of oxygen and one of hydrogen. That which is obtained from springs generally contains a large amount of mineral substances, and that from running streams often contains great numbers of minute animal and vegetable organisms and unorganized organic matter, as well as mineral substances. When it contains much lime it is said to be hard.

Water forms over two-thirds of the entire weight of the body. From this fact it is evident that the dietetic importance of it cannot be over-estimated. In its pure state it is not in itself nourishing, but without a sufficient amount of it other articles could not be assimilated, and all the nutritive changes progressing in the system would soon become perverted.

Water is rendered very unwholesome by the presence in it of sewage and some other forms of organic matter. The microscopic plants and animals commonly found in it do not seem to produce any injurious effects. Still, it is well that it should be as free as possible from all kinds of organic matter, and of minerals too. Rain water is the purest of all.

Water is the best of all beverages for people of every age. Under no circumstances should the advice, to either young or old, be, "Drink no longer water." It is the natural and proper drink for every one.

Of course, it is possible to use an excessive amount of water. Such intemperance is debilitating. It is largely a habit. Drinking ICED-WATER in excess is particularly injurious; it is very apt to disorder the digestive organs and weaken the entire system.

WATER-CRESSES form a wholesome salad, and are comparatively easy of digestion.

WATER-MELONS consist largely of water. Sugar is the principal nutritive element found in them. They are wholesome.

WHEATEN FLOUR contains from twelve to fifteen per cent. of nitrogenous matter, about sixty of starch, from one to one and a half and over of salts, about fifteen of water, and small amounts of other substances. It contains more phosphorus but less lime than oatmeal. That which contains most of the outer covering of the grain is the most nutritious, for it contains most gluten. The unbolted flour, however, is difficult of digestion. It is from it that the so-called Graham-bread is made. Practically this bread is little or no more nutritious than that made from ordinary flour. Being somewhat laxative is something in its favor.

Bread which is well leavened is easier of digestion than that which is unleavened.

Freshly baked bread is more difficult of digestion than that which has been baked some hours before it is used.

Bread should be the principal item of diet of the young, and, indeed, of persons of all ages. In itself it affords nourishment to the whole system.

WHISKY consists of about equal parts of alcohol and water. Some of it, however, contains various impurities. When pure its peculiar properties depend on the alcohol present in it.

Alcohol is produced through the fermentation of solutions containing sugar; and it is separated by distillation. The best whiskies are obtained from fermented malt.

Alcohol is a powerful stimulant. When taken in large amount it paralyzes the mental and other energies or intoxicates. The habitual use of it is extremely injurious to the system.

Dietetically alcohol is not of much value. Some hold that all of it which is consumed passes out of the system unchanged, that it does not become transformed into either force or fat; but this view is erroneous. However, it should never be regarded in any other light than as a medicine. The use of any spirituous liquor as a beverage cannot be too emphatically condemned.

Whisky flavored with juniper berries is called GIN. These, however, are often replaced by oil of turpentine, creasote, fusil oil, lemon-peel, and other agents. But at any rate gin is always somewhat diuretic. It is mostly on account of this property that it is prized.

WINE is the fermented juice of grapes; but to most varieties of it additions of various kinds are made. It contains from five to twenty-five per cent. of alcohol, which is the active constituent of it. *Ports, Madeiras* and *sherries* contain most of this agent.

Wine yields but little nourishment to the system. It is simply a mild stimulant. The use of it as a beverage is not so objectionable as that of spirituous liquors; indeed, as Shakspeare makes Iago say, "good wine is a good, familiar creature, if it be well used." But it is wrong for parents to help their children to form a liking for it. A desire for it not infrequently becomes a desire for something stronger.

REMARKS ON THE SELECTION OF FOODS.

There is plenty of room for the exercise of intelligence in the selection of foods. Besides knowing the dietetic value of each article, it is necessary to be able to judge of their condition. Meats, vegetables, and all aliments are liable to be

of very poor quality, or to be in such a state, from either disease or adulteration or otherwise, as to be unfit for use.

All decaying substances are, as a rule, unwholesome.

Unripe vegetables and fruits are apt to be very indigestible. In speaking of the possible digestive derangements which may be induced by the latter, the great Scottish physician, Dr. Cullen, says, "There are, indeed, stomachs whose gastric liquor may obviate all this, but certainly in many cases it may fail; and, therefore, the taking in of unripe fruits is always hazardous, and may be hurtful." The last clause of these remarks should be brought frequently to the attention of children.

REMARKS ON COOKERY.

Cookery or the preparation of foods for use is an art of the highest importance, one which is not duly appreciated. The elementary principles of it should be carefully studied by girls as a part of their education.

Cooking is practiced in order to render foods more digestible, or more palatable, or more pleasing to the sight; or it may subserve all these purposes.

Care should always be exercised to see that the process of preparation to which any article of diet is subjected does not make it unwholesome.

It is well to make as few composite dishes as possible.

The application of heat has the effect of coagulating albuminous and coloring substances, of gelatinizing fibrous and tendonous tissues, and of rendering muscular or fibrinous matter more dense.

The principal modes of cooking commonly practiced are boiling, stewing, roasting, broiling, baking and frying.

BOILING abstracts a large percentage of salts and other substances from foods, especially if they be tender. In cooking meat of any kind in this way the piece should be large

and as compact as possible, and it should be put into boiling water. On putting it into such water the albuminous matter upon and near the surface of it is coagulated, and hence forms a coating through which the juices and other substances cannot readily escape. The boiling should be continued for only a few minutes, and then the temperature of the water should be allowed to fall from thirty to forty degrees.

The addition of a little salt to soft water renders fish which is boiled in it firmer and better-flavored.

Vegetables boiled in salt water are less tender than if boiled in fresh water, but their color is preserved better.

STEWING is practiced when the object is to extract the nutritive elements of meats and other substances. The article, or articles, should be cut into small pieces, and put into cold water.

In ROASTING, as in boiling meats and other foods, the heat to which they are subjected should be highest at first. Articles cooked in this way are not as digestible as if boiled, and if much browned they are unwholesome to some extent, on account of the presence of different acids which are produced.

Remarks similar to those just made on roasting apply to BROILING, FRYING and BAKING, which are not essentially different modes of cooking.

Cooking utensils should always be kept perfectly clean, and none from which lead or any poisonous substance may be dissolved should be admitted into the kitchen.

EATING.

The subject of eating is one of supreme importance. Health and strength are vitally related to the diet, and it is accountable for much disease. Herodotus, the ancient historian, says of the Egyptians, that they "suppose that all diseases to which men are subject proceed from the food they use." This supposition is, doubtless, erroneous, but certainly people have great reason to pay attention to what they eat.

It should always be remembered that the only essential object of eating is to supply the body with nutritive matter.

Now, careful observation goes to show that an adult who performs a fair amount of labor needs daily from four to six ounces of nitrogenous matter, from one to three of fat, from ten to twenty of starch, from two to four of sugar, about three-fourths of one of solid mineral matter, and about a quart of water. In his work on "Health and Healthy Homes," Dr. George Wilson says: "In a standard or well-arranged diet the proportion of the different constituents should be as follows: albuminates one, fats six, and carbo-hydrates (starches and sugars) three; and experience shows that these are the proportions which man's unaided instinct has all along striven to maintain, so that when any particular food is deficient in any single constituent, it is generally associated with another which contains an excess of it. Thus, certain kinds of animal food which are deficient in fat, such as veal, fowl and liver, are invariably associated with ham or bacon. So, too, we use melted butter with certain varieties of fish, or fry them in oil, while salmon, eel and herring possess fat enough in themselves, and are eaten alone. Then, again, in making puddings we mix butter, milk, or eggs with sago, rice, or tapioca; salad is dressed with oil; rice boiled with milk; cheese or butter is taken with bread; bacon is used with cabbage and beans, and so on. These combinations are alike indicated by science and experience, and if the just proportions are departed from, sound health cannot be maintained."

Starches, sugars and oils are more called for in cold than in warm weather. Meats and animal foods in general are not required in large amount by the young.

Females require somewhat less food, as a rule, than males.

It is unwise to diet exclusively on a very few articles, if others as good, or better, can be readily procured. Abstaining

wholly from the use of meat and other food of an animal nature, or of milk, or anything which is wholesome, is unreasonable. It is a mistake, however, to have the diet very complex in character. The mixture of numerous articles will certainly derange the digestive organs. That many dishes make many diseases is a true observation. Armstrong well says—

“Would you long the sweets of health enjoy,
Or husband pleasure; at one impious meal
Exhaust not half the bounties of the year
Of every realm.”

Tempting the appetite with choice things is not to be commended. Says Plutarch: “Socrates advises us to beware of such meats as persuade a man to eat them, though he be not hungry, and of those drinks that would prevail with a man to drink them when he is not thirsty.”

The temperature of food should be neither very high nor very low. When moderately warm it is most agreeable to the stomach.

All solid food should be eaten slowly, so that it may be thoroughly masticated and mixed with saliva. If it be bolted the stomach is forced to perform an extra amount of labor.

There should be fixed times for eating. For all but very young children three meals a day are sufficient. The digestive organs should have some time to rest. It requires from two to four hours to digest an ordinary meal. In “The Code of Health of the School of Salerno” it is said—

“Eat not again till thou dost certain feel
Thy stomach freed of all its previous meal.
This may'st thou know from hunger's teasing call,
Or mouth that waters—surest sign of all.”

The mouth of the average child, perhaps, “waters” too often.

Children should not eat at the same table with adults, for similar food is not equally suitable for both. This is a matter which parents should seriously consider.

THE FOOD AND DIETING OF INFANTS.

Milk, the mother's milk, is the proper food for an infant. Nature indicates this beyond all question. In his work on "Diseases of Children," Dr. West, of London, makes the following remarks: "The infant whose mother refuses to perform toward it a mother's part, or who by accident, disease, or death, is deprived of the food that Nature destined for it, too often languishes and dies. Such children you may see with no fat to give plumpness to their limbs, no red particles in their blood to impart a healthy hue to their skin; their face wearing in infancy the lineaments of age, their voice a constant wail, their whole aspect an embodiment of woe. But give to such children the food that Nature destined for them, and if the remedy do not come too late to save them, the mournful cry will cease, the face will assume a look of content, by degrees the features of infancy will disclose themselves, the limbs will grow round, the skin pure red and white, and when at length we hear the merry laugh of babyhood it seems almost as if the little sufferer of some weeks before must have been a changeling, and this the real child brought back from fairyland."

No ordinary cause should be sufficient to prevent any mother from furnishing nourishment to her offspring. Any one who, from mere caprice, or fear of trouble, or any unimportant reason, declines to perform this great duty, merits the severest censure, utter condemnation, in fact. This she should do for her own sake, as well as her child's; for it contributes, as a rule, to her health. At no other time is a woman so strong and free from diseases as when nursing. To be sure, excessive and prolonged suckling will debilitate, unless great care be taken to support the strength.

I am aware that there are mothers who cannot, or who should not suckle their children. The breasts may be structurally defective, or the temperament may be so markedly

nervous that the milk is liable to be frequently unwholesome, or the system may be in a serofulous condition.

By properly regulating her diet and mode of life nearly every mother can yield her child sufficient nourishment. Exercise and warm, liquid food of a nourishing character will serve to increase it. Farinaceous and other articles of vegetable origin are better than those of an animal nature as milk-producers. Dr. Cullen says, "Nurses living entirely or for the greater part upon vegetable aliment afford a greater quantity of milk and of more proper quality than nurses living upon much animal food. This I venture to assert from the observation of fifty years, during which time I have known innumerable instances of the healthiest children reared upon the milk of nurses living entirely upon vegetable aliments; and I have known many instances of children becoming diseased by being fed with the milk of nurses who had changed their diet from entirely vegetable to the taking in a quantity of animal food. Nay, I have known instances of children becoming diseased from a nurse's taking a single meal of an unusually large proportion of animal food."

Beer, wine and spirituous liquors of all kinds, as well as strong tea and coffee, and all other stimulants, should be avoided, as a rule, while nursing. In almost every instance these agents are decidedly harmful to both mother and child. Exercise is an infinitely better appetizer than the best of them, and there is more milk afforded by eating a slice of bread than by drinking a quart of the most nourishing among them. If it be thought wise to resort to any special agent to improve the appetite, let it be a simple, non-stimulating, bitter preparation, such as an infusion of gentian.

A mother, while nursing, should scrupulously observe all the rules of health. If she does not she is not dealing justly by her child. Indeed, as Dr. Combe says, "the circumstances which among the middle and higher classes are most influen-

tial in impairing the fitness of the parent for the duties of a nurse are precisely those which deteriorate the general health, namely : neglect of exercise, living in over-heated, ill-ventilated rooms during the day and worse ventilated rooms, often made still closer by drawn curtains, during the night ; the use of soft, relaxing feather beds, dissipation of mind, or the absence of any serious or health-inspiring occupation, indulgence in late hours, night and morning, and giving way to passion and caprice of temper, eating more than the system requires or the stomach can digest, drinking unseasonably, or too largely of strong tea, malt liquors and other beverages, living in an unhealthy situation, inattention to the state of the skin, and to proper and sufficient clothing, excessive novel reading, and, in short, all the circumstances which are destructive of health."

A WET-NURSE may be procured when a child cannot have the blessed privilege of deriving its nourishment from its mother ; but it is so difficult to get an unobjectionable one that generally speaking it is better to resort to artificial feeding. She should be from twenty-five to thirty-five years of age, healthy, conscientious, of a happy nature, affectionate and intelligent. Her child should not have been born more than two months previous.

If a child is to be fed artificially, cow's milk, warmed to a blood-heat, is the food which should be used. That of one healthy animal should be obtained, if possible, but not that of one confined in the city and fed principally on swill. If it be of an average degree of richness it should be diluted with an equal amount of pure water, and a little sugar may be added to it during the first few weeks. In a month, or so, the mixture should not contain more than one-third of its bulk of water, and by the fifth, or sixth month no water should be added. The water renders it more digestible by preventing a very solid curd from forming in the stomach ;

hence a strong child need not have it diluted to as great a degree as a weak one. It is also rendered more digestible by adding to it a preparation of barley, or oatmeal, or unbolted flour, or arrowroot, or corn-starch, or gelatine, or isinglass, or gum-arabie. All these articles act in much the same way as the water, that is, they prevent a solid curd from forming. Of course, they are more or less nutritious. The best of them, perhaps, is oaten meal, and it should be prepared as follows: Put a tablespoonful of it in a quart of cold water, for ten, or twelve hours, and then boil the whole until it is reduced to a pint. Strain it while it is hot. When it is cold it should be of the consistency of syrup. It should be mixed with an equal amount of milk when about to be used. Pearl-barley may be prepared and used in the same way, and it is preferable for a child whose bowels are inclined to be relaxed. But no other food except milk need be given to a child, as a rule, until the ninth month. The addition to it, however, of a little of a preparation of oaten meal, or of any of the articles named above, or of Horlick's, Mellin's, or any other baby food, may be of advantage long before that time.

CONDENSED-MILK is held by some physicians to be just as good as ordinary cow's milk, for babies. The large amount of sugar which it contains renders it palatable to them. I agree with Dr. Edward Smith, who says, "It is much liked by them; but it is an error to assume that a given quantity when dissolved in water will yield new milk, or be as useful as new milk in feeding infants and young children, and it should never be used as a substitute in such cases whenever new milk can be obtained."

A NURSING-BOTTLE should be used in feeding a child artificially; because it prevents the food from being passed hastily into the stomach, and hence prevents indigestion. The simpler it is the better. The best consists of simply a soft, black rubber nipple and a bottle with a tapering neck.

One with a tube attached is very difficult to keep clean. But whatever kind is chosen let it be well washed frequently, and always be kept immersed in water when not in use. Every day, or two, it may be rinsed with soap and water, or with a solution of baking-soda. The utmost care should be exercised to keep it in a sweet condition, so that milk or whatever food is used be not rendered unwholesome by it.

On the second day after birth a child should use about a quarter of a pint of milk; on the third about two-thirds of a pint; and on the fourth about a pint. By the sixth month about a quart is required daily.

During the first month after birth a child should receive some nourishment every two hours, or so, by day, and every three hours by night. During the second month nourishment need not be given oftener than every three hours by day and every four hours by night. By the third month a healthy child need not receive food oftener than every four hours by day and once in the night. After the third month nothing need be given at night.

From the first let there be set times for nursing. An infant should receive its nourishment at the same hours, day after day. In this way a desirable habit is formed. And here I may say that it is a great mistake to feed a child every time it cries. Mothers should know that crying is not always due to hunger. It is often caused by colicky pains, which may be traced to irregular- and over-feeding.

WEANING or the act of replacing breast nourishment by an artificial diet should not, as a rule, be postponed to a much later date than the twelfth month, unless the child has not a sufficient number of teeth to enable it to masticate soft articles of food, or is very delicate. As Dr. Fonssagrives, of France, says in his book, "The Mother's Work with Sick Children," it happens that between the eruption of the anterior molars and that of the canines there is an interval of several months,

in the first dentition, which is an exceedingly favorable time for weaning. Mothers should know this fact, and, when possible, weaning should be deferred until the child has twelve teeth. This rule is infinitely better than any founded on age. Forced weaning, in conjunction with dentition, leads to disorders of the digestive passages. It will, therefore, be readily understood that it is inopportune, or rather, really dangerous to begin weaning during a teething crisis.

It is not well, as a rule, to wean any child, but especially one that is not very healthy, in the heat of summer; for the reason that serious bowel complaints are then very liable to occur.

The process of weaning should be gradual. Let the child be nursed for a shorter period each time, day after day, for a week, or so, and then lessen by degrees the number of times it is allowed daily. Cow's milk should be the principal item of the new food.

CHAPTER IV.

CLOTHING.

Preliminary Remarks—Properties of Clothing—Materials Used for Clothing—Colors, and Clothing—The Use of Clothing—The Style and other Features of Clothing.

PRELIMINARY REMARKS.

It may be taken for granted that ever since man appeared on the earth clothing of some kind and form has been used. There are few parts of the world in which it is possible to live, if entirely unprotected; but at any rate the instinct of propriety prompts people everywhere to use more or less covering for the person.

In our climate clothing is absolutely necessary; for the changes of temperature are so great and so frequent that disease and death would inevitably soon occur, in absence of it. While the temperature of the body can vary but little—not more than three-quarters of a degree below and about the same above that which is normal, namely, ninety-eight and four-tenths degrees—consistently with health, that of the air may have an annual range in this city (Philadelphia) of one hundred and five degrees.

When the temperature of the air falls to sixty-two degrees, or so, the unprotected body, in a state of health, tends to lose its heat faster than it is produced, unless an unusually large amount of fatty and starchy articles of diet is consumed. What, then, would the result be, if a person were exposed to a temperature far below, or even at the freezing point or thirty-two degrees?

There is room for the constant exercise of intelligence in choosing the kind and amount of clothing, so as to provide

for personal peculiarities and the daily and seasonal changes in the state of the atmosphere; and in its artistic bearings there is field enough for the display of much talent.

PROPERTIES OF CLOTHING.

In its properties, clothing may vary to any extent; it may be either warm or cool, heavy or light, loose or close in texture, and absorbent or non-absorbent of moisture.

It is an error to hold that some kinds of clothing furnish more heat than others, for none furnish any; all serve only to retard, in a measure, the heat which is produced in the body, in its escape; or, as Franklin puts it, "Clothing does not make a man warm by giving warmth, but by preventing the too quick dissipation of the heat produced in his body, and so occasioning an accumulation." The reason why some kinds seem to be warmer than others is chiefly because of the difference in their power of conducting heat. Generally speaking, the worse the material is as a conductor the warmer it seems to be.

When the material used as clothing is close in texture, it is warmer than if it be loose. But if it be very thick the reverse may be true. The explanation of this is found in the fact that air is a poor conductor. Then, if the material is in itself a good conductor, it is rendered less so by being thick and loose of texture. Hence, if a garment be of a given weight as a whole, the thicker and looser it is the warmer will it be. Practically, this is a matter of much importance.

Other things being equal, the more layers there are in one's clothing, the warmer it is. Thus, two thin garments placed one over the other afford more protection against cold than does a single one, which contains an equal weight of material. The explanation of this is found in the fact that between layers of clothing some air is confined.

A garment is warmer if it be moderately loose than if it be

tight-fitting. If it be very loose, of course, this does not hold good, for under such circumstances the air is allowed to circulate freely.

The drier clothing is the better does it retain heat. This arises from the fact that water is a comparatively good conductor. Hence the clothing which one feels warm enough in while dry, one feels cold in while damp. But, of course, the chilling effect of very moist clothing is due mainly to evaporation.

The relative powers of different kinds of clothing as absorbers and retainers of moisture should be well considered. Such materials as absorb quickly and much are objectionable in outer garments, at least, and such as absorb slowly and little are not the best in the garments which come into contact with the skin. Again, such materials as part with moisture very fast are the least suitable for garments which come into contact with the body. For, as already stated, evaporation is a chilling process. Of course, a garment that is moist will dry less fast if there is another over it than if there is not. This fact should be carefully borne in mind.

MATERIALS USED FOR CLOTHING.

The materials of which clothing is made are drawn from all the kingdoms of Nature. Nearly all, however, are either vegetable or animal in character. A few remarks on each of the several classes of them will be of interest.

COTTON FABRICS are made of the downy fibres found in connection with the seeds of the cotton plant, and are more extensively used than anything else for clothing, being the cheapest of all. Compared with linen and woollen goods they occupy an intermediate position as heat-retainers, and consequently, they are not as desirable for use in summer as the first, and in winter as the second. They are markedly non-absorbent of moisture, and dry moderately fast.

LINEN FABRICS are made of the fibre of flax, an annual

plant. Being good conductors of heat they are far better suited for use in summer than in winter. They are not very absorbent of moisture, but are more so than those of cotton, and dry faster than the latter.

WOOLEN FABRICS are made of the wool of various animals, but principally the sheep. Their heat-retaining power being relatively very great they are more suitable for use in cold than in warm weather. They are capable of absorbing much moisture, but they neither take it in nor give it off fast. Hence, apart from their heat-retaining power, they form the best under-wear for persons who are liable to perspire much. From being very absorbent special care must be taken to keep them clean.

SILKEN FABRICS are made from the cocoon or covering spun for itself by the silkworm to serve as a protection while it is developing into the perfect insect. They are very retentive of heat. As with woollen materials, by varying their weight it is possible to wear garments made of them with satisfaction all the year round.

MIXED FABRICS are produced in such great variety that I cannot attempt to give any description of them. They consist, for the most part, of various proportions of cotton and flax, or cotton and wool, or wool and silk. Merino, a fabric of cotton and wool, is very suitable for garments which come into contact with the body.

INDIA-RUBBER FABRICS are made of the gummy exudation of several tropical plants, but particularly the *Ficus elastica*. They are still more retentive of heat than those of silk or than furs, and are almost completely impervious to both water and air. It is only for occasional use, to protect the body against wet, that they can be recommended, because they prevent perspiration and other skin exhalations from passing off. The baby-wear, then, of this kind, which is to be found in the market, is not deserving of favor.

FURS or the dressed skins of various animals, being very retentive of heat, are extremely serviceable in very cold climates. With us they are used mainly for wraps and for trimming purposes in winter.

COLORS, AND CLOTHING.

The color of the materials used for clothing is a matter of importance ; for it has a great deal to do with their receptiveness of heat from without, from the sun, as well as with their appearance.

It is unnecessary to dwell on the nature of color. I may say, however, that it is intimately connected with structure. Light may be broken up by means of a three-cornered piece of glass, a prism, into seven marked colors, the colors which are seen in the rainbow, namely : red, orange, yellow, green, blue, indigo, violet. A substance which reflects the entire rays of the light of the sun completely appears white ; one which does not reflect any of them at all appears black ; one which reflects only the red rays appears red, and so on. It is evident, then, that the reflecting power or color of any material used for clothing has much to do with its warmth, for heat and light are closely related to each other.

Franklin drew particular attention to the practical significance of color in clothing. His conclusions on the subject were drawn from experiments with pieces of cloth of different colors, placed on snow, where the rays of the sun could fall on them. "In a few hours," says he, "the black, being warmed most by the sun, was sunk so low as to be below the stroke of the sun's rays ; the dark blue almost as low ; the light blue not quite so much as the dark ; the other colors less as they were lighter ; and the quite white remained on the surface of the snow, not having entered it all." It has been shown that a piece of shirting which, when white, receives a hundred degrees of heat, receives a hundred and

two when of a pale straw color, a hundred and forty when dark yellow, a hundred and fifty-five when light green, a hundred and sixty-eight when dark green, a hundred and sixty-five when Turkish red, a hundred and ninety-eight when light blue, and two hundred and eight when black.

From the remarks just made it is clear that black, blue, and other dark colors are far less suitable than white, yellow, and other light colors, in the clothing, if one wishes to keep cool.

THE USE OF CLOTHING.

The use of clothing is essentially to protect the body against cold, and to some extent also against heat. This fact should always be kept in mind in choosing it. That this is not generally done is evident to the most casual observer. In children especially, it is apt to be deficient in amount in some seasons of the year, and over-abundant and of ill-selected materials and colors in others, and badly distributed over the body in all. By it the extremities should be at least as well cared for as the trunk, so that an equal degree of heat may be maintained throughout the whole person. If one part be kept over-warm while another is allowed to be unnaturally cold, it is obvious that the system cannot be in a well-balanced state. Exposure of the limbs to cold while the rest of the body is kept excessively warm, is particularly injurious to the latter. It is under such circumstances that congestions and inflammations of the air-passages and other internal parts often arise. Beyond all doubt it is quite as important to see that the whole person is equally protected, as it is that it be shielded from becoming abnormally cold.

I am far from being an advocate of the use of such an amount and kind of clothing as will keep the body almost constantly wet with perspiration. This very practice is the cause of much debility and many attacks of disease. The

so-called hardening system of dressing is not half as bad in its consequences. It is better to be always a little too cold than a little too warm; for one who is overheated contracts catarrhs and other affections very easily, as every observer knows. Too many do not seem to be aware that through exercise and plenty of non-nitrogenous and other foods it is possible to preserve the body in a sufficiently warm state under exposure to a very low temperature. It is only when one must remain still and cannot diet suitably that it is wise to trust more to the conservation of heat than to its generation in the system. I would say, then, that for a healthy child, whose mode of life is properly regulated, it is better to be clothed rather scantily than otherwise.

THE STYLE AND OTHER FEATURES OF CLOTHING.

The style or make of the clothing is a matter which should be carefully considered, for it is often open to criticism in many respects.

Custom leads people to provide a different type of dress for different periods of life, and after early childhood for either sex. This is in no wise improper.

For infants, plenty of light, warm clothing, made so that it can be fastened without any pins, except perhaps two, or three safety ones, is necessary; and it should fit loosely. In them the power to generate heat is often not very marked. Next their skin flannel, or merino should be worn all the year round; or for a while at first a shirt of linen, on account of being smoother to the touch, may be placed beneath the garment of one or the other of these materials. Of course, the material should be of a heavier grade in winter than in summer, unless the rest of the clothing is changed so as to meet the requirements of the season. It serves not only to protect the child from the effects of draughts and variations in the temperature of the air, but to gently excite the surface of the

body, and thus ward off, in a measure, congestions and the like, of internal parts.

For the first two or three months a linen, or muslin, or merino, or flannel BAND should be placed around the body of a child; for in early infancy straining may give rise to a rupture. It also tends to prevent flatulent colic. But let it not consist of more than two folds, and let it not be very tight.

The very long dresses which are usually worn for three or four months after birth keep the lower limbs warm, but they are objectionable, in that they impede the movements of the child and in that they drag heavily upon it.

The HEAD-DRESS of young children should be carefully regulated. I believe the error of having it too warm is commoner than the reverse. None at all is required, as a rule, unless the air is unusually cold. Nature furnishes an appropriate covering, as soon as it is needed. In his popular work, "The Physical Training of Children," Dr. Chavasse, of England, says: "The head ought to be kept cool. Caps, therefore, are unnecessary. If caps be used at all they should only be worn for the first month in summer, or for the first two, or three months in winter. If a babe take to caps it requires care in leaving them off, or he will catch cold. When you are about discontinuing them, put a thinner and a thinner one on every time they are changed, until you leave them off altogether. But remember my opinion is that a child is better without caps; they only heat the head, cause undue perspiration, and thus make him more liable to catch cold."

If a child be much exposed to bright sunshine, some sort of light covering for the head should be worn, and be so arranged as to afford protection to the eyes. Undue exposure of the eyes of young children is both an injurious and a common practice.

As regards the use of a cap to support the head until it is well closed, I may remark, that it is seldom required, and

rarely does any good. If the head is very open and is inclined to spread, it is well to use it, but let it be of very light, cool material.

I need scarcely say that great care should be exercised in replacing clothing that is very warm by that which is cooler. And in this connection I may observe, that in winter wraps which can be both easily put on and easily removed should be used. By means of them the body can be protected against extremes of temperature.

The style of dress commonly worn in childhood exposes the extremities too much. It is little short of criminal to leave a child's legs unprotected in cold weather. But I have dwelt on this subject sufficiently above.

A tendency prevails now to dress boys and girls after the manner of grown up people. This is not well, especially for the latter, either physically or mentally. Immature bodies and minds should not be treated as if mature. A style of dress which interferes with the growth of the body is unsuitable for the young.

There is less fault to be found with the adult costume of males than of females. That of the former is in the main both healthful and comfortable, while that of the latter is too generally neither.

The dress of females mostly compresses the chest excessively, through the use of corsets, and weighs too heavily on the abdominal region, on account of the absence of shoulder straps and the way in which it is distributed. The head-dress worn by them is generally void of use. Indeed, the fashion which happens to be in the ascendency often leads most mothers to dress themselves, as well as their children, in a manner at once unhealthful and inartistic. It is a pity that the fashions are not always dictated by persons who understand something about both art and the laws of health.

Of the evils which spring from COMPRESSION of different

parts of the body, but especially about the waist, I might say much. Many premature deaths might be traced to this cause. A very slight obstruction of the action of the lungs or of the circulation of the blood reduces the strength and induces disease. In the period of growth it is sure to stunt and deform. Far less pressure than most people suppose is required to modify the growth and conformation of any part of the body. It matters not how loose corsets are, they will interfere with the development of the chest-walls. Let parents mark these words, and as rational beings draw some practical lessons from them.

In conclusion, I would say, in reference to female costume, in the words of Dr. George Wilson, that it should always be fashioned so as to obey the proportions of the body, and never to contradict the natural lines of the figure. Any dress or article of dress, therefore, which interferes with free movement and easy and graceful carriage, is objectionable. Tight dresses are objectionable because they cramp the movements of the lower limbs; long dresses are objectionable because they drag by their weight, and because the skirts often become wet and dirty; garters worn below the knee are objectionable, because they impede the free circulation of the blood, and are apt to induce varicose veins; low bodices are objectionable, artistically, because they detract from the height, and from a health point of view they are still more objectionable because many suffer severely from such exposure during cold weather. The present close-fitting dresses, provided they are not made too tight, are to be commended, because they are strictly in accordance with the natural lines of the body, and they are certainly calculated to display the beautiful proportions of a well made figure. But they tempt those who are inclined to be a little too stout to brace themselves in every way too tightly, and those who are somewhat thin and angular to resort to padding and other strange devices.

CHAPTER V.

CLEANLINESS.

Preliminary Remarks—Personal Cleanliness—Remarks about Bathing—Rules for Bathers—Baths and their Effects—Cleanliness in Clothing.

PRELIMINARY REMARKS.

It is proper to regard cleanliness as a virtue. In the laws of Moses much emphasis is placed on it, and among Oriental peoples it still forms a part of the prevailing religions. That it is next to godliness is a phrase familiar to every one. It is observed by the *Spectator* that "the more any country is civilized the more they consult this part of politeness." Whether this is true or not, it certainly is civilizing as well as wise to be cleanly.

Some there are who are so enamored of dirt that they think it positively injurious to wash themselves. Such use of water they regard as unhealthful. Just why this idea should be entertained by any one it would be hard to tell. I am not aware that, under any circumstances, is an ablution harmful to a person in an unclean state. That it is weakening is untrue, unless it be indulged in injudiciously. Nor is there any ground for the idea that it renders the system very susceptible of colds and the like. In fact, it has always the reverse effect, except, perhaps, when the water used is very warm. None of the arguments which can be brought forward in favor of uncleanness are of any weight. Indeed, when any are presented, it is generally by way of extenuation of one's neglect of what all sensible people hold to be a duty.

PERSONAL CLEANLINESS.

It is desirable to keep one's self clean, on account of its being necessary to both decency and health. It must be said that it is too generally viewed in the former light only. Certainly a large percentage of people rarely wash any but the parts that show; and even these are neglected greatly by many. The unsightliness, however, of children, at any rate, besmeared with dirt, is sufficient reason why those in charge of them should take pains to keep them clean. As it requires but little labor and not much time to discharge this duty, there can be no excuse for not attending to it. And in this connection I cannot help remarking that it tends to injure the morals, as it unquestionably does the manners of a child, or indeed, of any one, to be dirty. As Dr. George Wilson says: "Filth and moral depravity generally go hand in hand."

It is for the sake of health especially that frequent ablutions of, not only the face and hands, but the whole body, should be made. If the skin is dirty it cannot perform its functions properly; and if it does not do so, some disturbance of the system will follow. From it exhale, as I have elsewhere stated, through its numerous pores, water, carbonic acid, and other substances; or in the words of Armstrong—

"Through the small arterial mouths that pierce
In endless millions the close woven skin,
The baser fluids in a constant stream
Escape."

If the action of the countless little glands which are situated in the skin be seriously interfered with disagreeable eruptions and serious constitutional disturbances result. Dr. Erasmus Wilson, a celebrated English authority on cutaneous diseases, writes: "I counted the perspiratory pores in the palm of the hand, and found three thousand five hundred and twenty-eight in a square inch. Now, each of these pores being the aperture of a little tube of about a quarter of an inch

long, it follows that in a square inch of skin on the palm of the hand there exists a length of tube equal to eight hundred and eighty-two inches, or seventy-three and a half feet. Surely such an amount of drainage as seventy-three feet in every square inch of skin, assuming this to be the average of the whole body, is something wonderful, and the thought naturally intrudes itself—what if this drainage were obstructed?”

Besides the improvement to the personal appearance and to health consequent on frequent ablutions, any unpleasant aroma which might be present is generally not only prevented but replaced by one of an agreeable character. And let me observe in respect to personal odors, that everybody should at least strive to be like Alexander the Great, of whom it was said, as we are told by Plutarch, that “a most agreeable scent proceeded from his skin, and that his breath and whole body were so fragrant as to perfume his under-garments.” A healthy, clean child should be possessed of an aroma not unlike and quite as pleasant as that of violets.

REMARKS ABOUT BATHING.

At birth it is, perhaps, best not to give a child a full bath, on account of the chilling effect which may result. It can be cleansed well enough through the use of a little sweet oil, or lard, and a soft napkin. If sponging or any form of bathing be resorted to it should be with water of a temperature little below that of the blood; and it should be done as quickly as possible.

In washing or bathing young children care should always be taken to wipe every part of the body thoroughly dry. All deep creases of the skin should be dusted with rice flour, or some other absorbing powder; for in this way excoriations and other sores which are often very troublesome may be prevented from occurring.

Throughout infancy a bath daily may be set down as absolutely necessary. Except a child is very delicate, it should be given in the morning before any nourishment is supplied. The reason why it is not well to bathe very delicate children before they have received some nourishment is because their heat-producing powers are feeble. But it is wrong to bathe them immediately after eating, because it will interfere with digestion. Let it be postponed for an hour, or two. However, a child must be very weak if it cannot bear a short bath in tepid water, at any time.

The temperature of the water in which to bathe a child may range from sixty degrees upward ; but it is well in nearly all cases to have it below ninety. For strong children it should be colder than for weak ones. But almost any child may be bathed in very cold water, if it be kept in it for only a minute, or so.

The temperature of the water used in bathing should not be regulated by the impression made by it on the hand, for sensation is a fallacious index of its degree. Let a THERMOMETER be provided. This instrument costs but little, and is so simple that any one can use it.

If a suitable BATH-TUB is not at hand, any vessel which is large enough will answer in its place. Certainly the absence of one in a house is no excuse for not bathing children every day.

In proceeding to bathe a child, let his head be wet and then place him at once in the water and keep him there for the desired length of time. On removing him let him be wiped dry, as quickly as possible, and be gently rubbed until the skin is in a glowing state. If the wiping is delayed the chilling which arises from the evaporation of the water may possibly be followed by a cold. If any soap be used fine Castile is the best. These directions should be observed in bathing children of any age.

In place of immersing the body in water, what is called a SPONGE-BATH may be given. Through it the system is not very profoundly impressed. If the person is feeble it must not be prolonged. This mode of bathing is not so objectionable to many children as the plunge-bath, and altogether it is to be highly commended. Dr. B. W. Richardson, of England, says, "The simplest and best bath is the ordinary sponge-bath. Plungings, splashings, showers, and the like, are mere pastimes." Those that are old enough to be able to take it for themselves cannot be taught a better habit than to indulge in it every morning on arising. Any one who practices it every day for a while will not likely give it up, for it is very refreshing. All talk of getting cold from it is little short of nonsense. Indeed, there is no better means by which to ward off colds. The great surgeon, Sir Astley Cooper, has left these words on record: "The methods by which I preserve my own health are, temperance, early rising and sponging the body every morning with cold water, immediately after getting out of bed, a practice which I have adopted for thirty years; and although I go from the hot theatre into the squares of the hospital on the severest winter nights, with merely silk stockings on my legs, I scarcely ever have a cold."

RULES FOR BATHERS.

As it is wise for parents to give their children special instructions about bathing, I append the following, which are those issued by the Royal Humane Society, of England: "Avoid bathing within two hours after a meal. Avoid bathing when exhausted by fatigue or from any other cause. Avoid bathing when the body is cooling after perspiration. Avoid bathing altogether in the open air, if after having been a short time in the water there is a sense of chilliness with numbness of the hands and feet; but bathe when the body is

warm, provided no time is lost in getting into the water. Avoid chilling the body by sitting, or standing undressed on the banks, or in boats, after having been in the water. Avoid remaining too long in the water, but leave the water immediately there is the slightest feeling of chilliness. The vigorous and strong may bathe early in the morning on an empty stomach. The young and those who are weak had better bathe two or three hours after a meal. The best time for such is from two to three hours after breakfast. Those who are subject to attacks of giddiness or faintness, and those who suffer from palpitation or other sense of discomfort at the heart, should not bathe without first consulting their medical adviser."

BATHS AND THEIR EFFECTS.

The different kinds of baths and their effects are deserving of careful study. I do not propose, however, to speak here of any but those of ordinary water, which are generally resorted to in health.

THE COLD-BATH may be of any temperature below eighty-five degrees. When very cold it is not agreeable to the feelings of persons unaccustomed to it, and it may be dangerous to the feeble. For the abstraction of heat from the body of one having little to lose is weakening, and if reaction is slow congestion or some other morbid condition of the lungs and other organs may be produced.

If a cold-bath be given to a very young child, or a delicate one of any age, it should be less than five minutes in duration, and the skin should be quickly dried and be freely rubbed. Healthy, strong children can remain in a bath of a temperature of sixty degrees for a considerable time without becoming excessively cold. But it is well to remember that the temperature of the body continues to become lower for a few minutes after coming out of the water. This is due to evaporation.

A taste for bathing in cold water may be formed, and it should be cultivated. Even for children only two, or three months old it is best to have the temperature of it considerably below eighty-five degrees, for it tends greatly to tone up the whole system, and fortify it against the impression of cold. One of the most important advantages derivable from a cold bath, as also to some extent from all others, is its equalizing effect on the circulation of the blood. Thus, if a child is suffering from a full feeling about the head, a congestive headache, caused by sitting in a bent posture, or by over-study, there is no remedy equal to it.

It is not amiss to remark that the temperature of the surrounding air has an important bearing on the feelings aroused by the temperature of a bath. As Bacon says, "Heat, with regard to the human senses and touch, is various and relative, so that lukewarm water appears hot if the hand be cold, and cold if the hand be hot." Hence one may prepare the body, as it were, for a cold-bath by getting as cool as possible before going into it; but it is generally wrong to do this, the marked impression at once made on the system being one of the benefits to be had from bathing in cold water.

TEPID-BATHS may be of any temperature from eighty-five to ninety-five degrees. They are soothing and sedative in their effects. However pleasant they may be, the use of them is weakening and favors the contraction of colds.

The quieting effects on the system of a bath at ninety degrees, or so, may be taken advantage of occasionally in the evening, to procure sleep for children when inclined to be restless at night.

WARM-BATHS are those of a temperature of ninety-five degrees and over, and should be regarded exclusively as remedial, for in health they are harmful, being very relaxing and debilitating. Indulging the craving of children for them is a serious mistake. Elsewhere more will be said of them.

CLEANLINESS IN CLOTHING.

It is highly important that the clothing, as well as the person, should be kept clean. The idea prevails to some extent that it is weakening to make frequent changes, particularly of the under-clothing, but there is no ground for it.

Special care is required to keep the clothing of infants clean. From an early age, however, a child can be taught to give warning of its necessities. Children on whom napkins must be kept for much over three months are badly trained.

Wet and soiled linen should always be removed from a child as soon as possible, for if it be not, skin affections will be produced by it.

Keeping children dressed so elegantly that they are constantly afraid to play is bad for them. This is one of the great causes of the sickness which is so common among children of rich people, especially in cities. For it is not because they are the dirtiest that the children of the poor are often the healthiest, but because they are most at liberty to play as they please.

CHAPTER VI.

EXERCISE.

*Preliminary Remarks—Exercise in Early Infancy—Creeping
—Walking—Playing—Sports and Active Games—Work.*

PRELIMINARY REMARKS.

Action is the very fount of vitality. That sharp and friendly observer of natural things, Cowper, remarks:—

“By ceaseless action all that is subsists;
Constant rotation of the unwearied wheel
That Nature rides on maintains her health,
Her beauty, her fertility. She dreads
An instant's pause, and lives but while she moves.”

Life itself is simply the sum of the functional activities of the various parts of the body. Let the nutritive changes progressing within the organism stop and existence is immediately at an end. But the speed and volume of these changes vary, not only from day to day, but from hour to hour; consequently life may ebb and flow like the water of the ocean.

Now, the various activities of the system are subject to control. Through exercise and food they may be either increased or diminished within wide limits. By keeping still and fasting, it is possible to reduce them to any degree, to bring life, at will, to the verge of extinction. In animals which hibernate, or pass the colder part of the year in a motionless state, such as bats and moles, the torpidity of their functions may be so marked that it is almost impossible to say whether or not they are alive or dead. On the other hand, by exercising and eating freely life may be made both more intense and more

ample. It would seem, then, that the regulation of the movements of the body is eminently deserving of attention.

Exercise is beneficial at every period of life, but pre-eminently so in its early stages. By nature children are fond of it, even from birth. Nor can it be indulged in too early. The playful struggling of the infant in its mother's arms is the expression of a wholesome instinct. As the educational reformer, Frœbel, says, "When the child is born its first manifestation is motion ; motion of its limbs and motion of its interior by screaming. Physical development can come only by motion. The child a few months old, lying in its cradle, plays with its limbs, grasps its tiny feet, kicks and plays with its fingers."

There is no surer way of blighting the development and growth of children than by forcing them to be inactive. Confining them closely in their home or in a school room is an unwise policy, yet it is one which prevails to a great extent. Many are ruined in this way. Let them gratify, then, their instinctive craving for motion.

Girls are generally restricted more in their movements than boys. This doubtless is one of the reasons why women are less robust and healthy than men. Exercise is equally good for children of either sex; and restraining activity is as bad for females as males.

A CHILD'S-NURSE should be a person fond of exercise and youthful, a person who can take an interest in the likings of childhood. An aged, morose, precise one is very unsuitable. Such a one is not unfrequently the means of bringing a child to an untimely grave.

EXERCISE IN EARLY INFANCY.

During the earlier months of infancy a child should be given plenty of exercise by its mother, or nurse. It should be taken into the open air at stated periods every day, unless

the weather is very cold, damp and boisterous. But let it be handled carefully and be kept in a semi-recumbent position. Until after the second month is reached the head must be supported, for up to then the power to hold it erect is not acquired. The back also should receive attention up to and beyond the third month, or in other words, until the child has strength enough to enable it to sit alone.

The use of a perambulator or baby's carriage, in early infancy, or later, is not entirely commendable. A ride in it affords a child fresh air, but not a great deal of exercise. Dr. Chavasse says, "A perambulator is very apt to make a child stoop, and to make him both crooked and round-shouldered. He is cramped by being so long in one position. It is painful to notice a babe a few months old in one of the new-fangled carriages. His little head is bobbing about, first on one side and then on the other—at one moment it is dropping on his chest, the next it is forcibly jolted behind. He looks, and doubtless feels, wretched and uncomfortable. Again, these perambulators are dangerous in crowded thoroughfares." Evidently a perambulator may be very harmful to a child. However, if used with discretion, it is not meritless.

CREEPING.

Creeping is an excellent as well as a natural species of exercise. By practicing it freely for a while a child gradually gains the strength necessary to enable it to walk. As Dr. Combe remarks, by exercise thus adapted to the state of the system the infant will learn to walk much sooner and with a firmer and more erect carriage than if too early set on its feet and supported either by the arm or by leading-strings. The chest will be better developed and, consequently, the whole system benefited. With moderate caution on the part of the attendant, there is nothing to fear in thus indulging a child; for it is even amusing to see how carefully it generally

is about its own safety when left to itself. When a mother takes entire charge of the exercise of an infant, and judges of its risks by her own anxious feelings, she is sure to err. But remove all external means of injury and leave the child to its own direction and it will rarely hurt itself. It will crawl till its bones become firm enough to bear the weight of its body and its muscles powerful enough to move them.

I am inclined to believe that a great many children are denied the wholesome privilege of creeping. The only objection which can be urged against it is, that the clothing may be injured; but this is a matter of too little importance to be allowed to stand in the way of the allowance of a valuable means of physical development and growth.

WALKING.

Walking is the most natural form of exercise, as soon as the art is acquired; and as it calls into play almost all the muscles of the body in a gentle way, it is the best. It should consequently be encouraged. It is a great mistake, however, to force children to walk very early. The art is usually acquired from the tenth to the twelfth month; but it may not be for a considerable time afterward without being a cause for any anxiety. The delay can do no harm, and if the bony system of the child is not well developed, walking early may bow its legs, and still more injuriously affect its spine. Walking-chairs, leading-strings and the like should not be used; for they injure by encouraging the desire to keep on the feet before the body has become sufficiently strong and subject to the will. Let creeping be indulged in freely, and the power to stand up will soon be gained.

After children are able to walk they should be allowed to move about at pleasure.

From even an early age walking three, four, or five miles every day is advantageous to health.

PLAYING.

Playing is as natural as eating to a person of tender years, and is but a little less necessary to life. The young are liberally endowed by Nature with the propensity for it. They seem to "loathe the languor of repose," to use the words of Byron. It is proper for parents to fully appreciate this fact. Nor is it unbecoming for them to join their offspring in their childish sports. Plutarch relates of the great Lacedemonian general and king, Agesilaus, that "it is said when his children were small he would join in their sports; and a friend happening to find him one day riding a stick, he desired him 'not to mention it till he was a father of children himself.'"

Children are greatly benefited by play, especially if it be in the open air. The little boys and girls who are allowed to romp about at will generally grow up healthy and strong.

SPORTS AND ACTIVE GAMES.

It may not be amiss to at least refer to each of the various sports and active games which are more or less indulged in by the young. But I may first throw out a few words of caution.

When in a state of perspiration from exercise, one should not sit on the ground, if cold and damp, or rest in a strong current of air in the shade, or drink liberally of cold water; for a sudden chilling of the body may induce catarrhs and other diseases. This advice is summed up in "The Code of Health of the School of Salernum" thus—

"In whate'er engaged, or sport, or feat,
Cool not too soon the body when in heat."

ARCHERY or the art of shooting with a bow and arrow has been practiced from the earliest times. It was, formerly, the chief means of offence in war. As a sport it exercises, to some extent, all the different parts of the body and trains the eye. In England and elsewhere it is popular with girls as

well as boys. Of late it has been growing in favor with the young of both sexes in this country, and a taste for it is worthy of encouragement.

BALL-PLAYING exercises the various parts of the body ; it brings all the muscles which are above as well as those below the waist into play ; and through it the eye is trained and the mental faculties are rendered alert. We are told by Homer that the Phæacian girls played ball to the sound of music. It was a leading sport among both the Greeks and Romans.

BASE-BALL affords plenty of exercise to both body and mind. Through batting, bowling, catching the ball, and running, all the muscles are brought into play and most of the mental faculties are kept in action. Like some other sports, it may be indulged in to excess, and accidents have occurred from it, but altogether, it is worthy of great favor. Girls might play it to advantage, but custom forbids it.

BATTLE-DOOR AND SHUTTLE-COCK, or driving a ball stuck with feathers (a shuttle-cock) backward and forward, keeping it in the air, with a flat bat (a battle-door), is an old-time sport. As an exercise it is very similar to ball-playing, but is not attended with as much risk of accidents. Girls enjoy it quite as much as boys.

CARRIAGE-RIDING affords little or no exercise. The value of it lies in the opportunity it gives to get fresh air and change of scene.

CRICKET is very similar, both as a sport and as an exercise, to base-ball. In England and other European countries it is very popular, and it is growing in popularity among us.

CROQUET is an agreeable but not a very active field sport. It is very suitable for girls. Like archery, it merits particular attention, because of the fact that persons of either sex can engage in it together. On this point Dr. B. W. Richardson remarks, "It cannot be too strongly urged that all recreations which bring the young of both sexes together are doubly

useful. Such combinations in recreation impart courage and strength to women, gentleness and strength to men."

DANCING or moving in harmony with the sounds of music formed a part of the religious ceremonies of nearly all the peoples of antiquity, and it is still so employed by many. It is one of the most ancient of sports, and it promises to be popular forever. Nor is it unworthy of esteem, for through it the body is exercised, the mind is exhilarated, and the intercourse of the sexes is promoted. Children cannot be taught the art too soon, because in addition to the advantage just named as being derivable from it, the practice of it imparts to them, better, perhaps, than anything else, grace of motion, self-confidence, and ease of manner.

Of course, it is possible to dance too much. Indulging in it frequently and excessively, in hot, ill-ventilated rooms, until a late hour at night, is ruinous to the health of persons of either sex, but particularly of females.

FISHING is to many an amusing sport, but it is, generally speaking, not attended with much exercise to either mind or body. Indeed, it rather soothes than excites the system. Persons of either sex who require rest may resort to it with advantage. The cruelty of it is something of an objection to it.

FOOT-BALL is a very exciting sport, one which is much enjoyed by most boys. It is an excellent way to exercise the body, but it is very exhausting.

GRACES or a play in which a little hoop is thrown from one person to another, by means of two sticks in the hands of each, is amusing to many children of either sex. Like all gentle out-of-door exercises, it is commendable.

GUNNING and HUNTING afford excellent exercise, but they are not suitable sports for the young. They are not without danger, and are cruel.

HARE AND HOUNDS OR HUNT THE HARE is an excellent

sport. As an exercise it is of much the same import as running.

HOOP-ROLLING is an admirable exercise for both boys and girls.

HORSEBACK-RIDING has always been highly recommended as an exercise. Through it the whole body is gently put in action, and it may afford an unlimited amount of diversion to the mind. It is equally advantageous to both boys and girls.

JACK-STONES afford more exercise to the mind than the body. Playing with them is very pleasing to the majority of little girls.

JUMPING is not a commendable sport. It shocks the system too much, and it is a common cause of sprains.

KITE-FLYING is a favorite sport of children of both sexes, but especially of boys. It affords some exercise to the body, and also amuses the mind. Practicing it on the roofs of houses has led to many serious accidents.

LEAP-FROG or a play in which one boy stoops down while others jump over him may be the means of much exercise, but the objections raised to jumping are applicable to it.

MARBLE-SHOOTING is a game which affords considerable exercise to both body and mind, as well as training to the hand and the eyes. It is very interesting to boys.

MILITARY-DRILLS are certainly very improving to the physical condition of boys. Through them the bearing and gait are often quickly changed for the better. The practice of them in schools is deserving of commendation. And they are as advantageous to girls as to boys.

NINE-PINS is a play in which nine pieces of wood are set up on their ends on the ground, to be knocked down by a bowl or ball which is thrown at them from some distance. If ten pieces of wood are used it is called ten-pins. As an exercise it calls for no special remark.

QUOITS, as a game, resembles the ancient one of throwing

the discus. It is played with round, flat, metallic rings, from a few inches to a foot in diameter. These are pitched at a pin or hob, which is placed on the ground at any desired distance, the object being to throw the quoit over the hob, or as near to it as possible. This sport affords some exercise to the body as well as the eye, and may be practiced by persons of either sex.

RING-GAMES of various kinds not only afford exercise, but are very amusing to children of either sex. As I pen these lines the sweet voices of a company of little girls thus at play are heard. And it is very pleasant, indeed, to listen to the lisp-
ing of "London bridge is falling down, falling down," and of

" Here we go round the mulberry bush,
Mulberry bush, mulberry bush—
Here we go round the mulberry bush,
So merrily.

ROWING is an interesting sport, and it brings into play all parts of the body. The practice of it tends greatly to strengthen the lungs and enlarge the chest. But it is possible to indulge in it to excess. And here I may say that boat-racing, like all matches which call for the exercise of all the power at one's command, is very injurious to those who engage in it.

RUNNING is a powerful form of exercise. Through it the functional action of every organ in the body is stimulated, and all the muscles are brought into play.

SHINNY OR BANDY is a play in which one set of boys endeavors to force a ball to one end of a plot of ground, while another endeavors to force it in the opposite direction. Each boy uses a bent stick. This is an extremely exciting sport, and it yields plenty of exercise to the body, and not a little to the mind.

SINGING calls most of the muscles of the chest into action and both enlarges and strengthens the lungs.

SKATING is a commendable winter sport, but to a person

who cannot do it expertly it is apt to be very straining to the system. The circumstances under which it is generally practiced are obviously such as require that great care be taken not to catch cold.

SKIPPING THE ROPE is one of the few active sports which custom allows girls to indulge in. It involves too much jumping to be altogether commendable. Still, if not practiced excessively it is a desirable exercise.

SLEDDING and COASTING are amusing sports to children of either sex, and if proper care be exercised against accidents and catching cold, they may be practiced freely with advantage.

SWIMMING should be learned by persons of either sex, not only because it is an excellent exercise, but because it may be, at some time, the means of preserving life.

SWINGING is certainly bad for children, until they get used to it. If it cause giddiness it is harmful.

TENNIS is very similar to battle-door and shuttle-cock, and the remarks made on the latter are applicable to it.

TOP-SPINNING is a healthful sport for boys.

WRESTLING is not a desirable sport. The exercise afforded by it is not gentle enough; it is of a straining character.

VELOCIPED- and BICYCLE-RIDING are sports which are much enjoyed by children, and as exercises they are healthful.

WORK.

Working early in life is looked on by many as undesirable. I am far from being of that opinion. Of course, it is wrong to keep the very young, children who ought to be at school, at steady work; and to be sure, there are forms of employment which are stunting and otherwise injurious to both body and mind; but there are others which are just the reverse.

Boys brought up on a farm, as a rule, turn out to be the healthiest men, as well as the most successful in life. The

explanation of this is to be found, for the most part, in the fact that they are led to engage, more or less, in out-of-door labor from an early age. And here I may observe that all children have naturally a taste for cultivating the soil and caring for animals. Fröbel well says, "After children have obtained free use of their limbs, we see all that are not kept from it by their parents, who fear the soiling of their clothes, digging in the earth. With the nearest stick, or shovel they throw up the ground, make hills and other forms, with great delight. They soon begin to cultivate the earth with a purpose. * * * The child who has never owned a little piece of land, never worked it in the sweat of his brow, never taken loving care of plants and animals, will always have a blank in the development of his soul."

In cities there are, unfortunately, not many kinds of work suitable for either boys or girls. It is certainly bad for either to be confined for many hours daily in factories and stores, particularly if the employment is not such as calls for much physical exertion.

Girls should be taught to do either housework or something else, from an early period. As quaintly remarked in the *Spectator*, they should be kept busy, "if it were only to keep them out of harm's way." Many after giving up going to school become sickly and unhappy, simply because they do nothing. With plenty to do life would be far more interesting to them, and their condition, physically and mentally, would be very different.

IDLENESS is bad for the young of either sex. It is a sort of infirmity, and the more complete it is the lazier is one apt to be made by it. Some are so affected by it that they are too lazy to ever take recreative exercise of any kind. But the worst of idleness is that it leads to wrong-doing. As Ecclesiasticus says, it "hath taught much evil." Spending youth idly is a fruitful source of uselessness and crime in after life.

CHAPTER VII.

WAKING AND SLEEPING.

Preliminary Remarks—The Nursery—The Bed-room—Beds and Bedding—The Posture in Sleep—On Sleeping Alone and with Others—Sleep in Infancy—On Putting Infants Asleep—Hours of Sleep for the Young—Dreaming, Nightmare and Night-Terrors.

PRELIMINARY REMARKS.

In passing through life most people spend about one-third of the time in an unconscious state. Nor is this unnecessary. Some sleep is almost as essential as food or as air; no one can do without it more than a few weeks.

When rapt in sleep the body and mind rest and gather strength. For, while awake the system tends to run down, to become exhausted. Hence, sleep is a restorative; and it is because it is so that it serves in early years to favor growth.

In infancy, the faculties of the mind being undeveloped, the system is in a comparatively passive state. Until intellectual activity begins, intense consciousness does not exist. But from a very early period there is a wide difference between the state of the system while waking and while sleeping.

Sleep follows wakefulness as a natural result. During the waking hours the body grows tired and weak from exercise, physical and mental. It is evident, then, that exertion tends to bring on sleepiness; and hence the best way to induce sleep is to be active while awake.

Mere languor of the system may be the cause of constant heaviness. This state is not attended with sound, refreshing sleep. It may be, and often is induced by idleness, by slothfulness. A habit of taking naps in the day-time leads to it

in persons who do not exercise much. In the Salernian Code of Health people are very properly told to "shun idle, noon-day slumber." From early infancy a person should keep well awake when not asleep, so that when sleep is indulged in it will be sound.

THE NURSERY.

The room, or rooms, selected for nursery purposes, should be large, on either the second floor or higher, of a southern exposure, easily heated, and provided with proper facilities for keeping the air pure. The prospect or view should be interesting and cheerful, so that the child may have in it the source of pleasant impressions. Let the windows be provided with bars, so as to preclude the possibility of a fall. The furniture should be more for use than ornament. None of it should be upholstered, or in any way such as cannot be easily kept clean. It is well to keep the floor bare. This need not be the cause of colds, but at any rate, it would be better to suffer occasionally from a cold than run the risk of being slowly poisoned by dust and various exhalations, which are apt to arise from a carpet, in spite of efforts to prevent them. As a rug can be taken up, shaken, and exposed in the open air readily, it is not so objectionable as a carpet. On the walls there should be only a few pictures, and these of such a nature as to inspire the youthful mind with pleasant feelings and noble sentiments. At the proper time it should be provided with toys, hobby-horses, and such things generally as will tend to make its inmates happy and playful.

The temperature of the air of the nursery should be at from seventy to seventy-five degrees during the first two or three months of infancy, but at from sixty-five to seventy it is high enough for children in general. In winter it is usually kept far too warm and dry. Dr. Bull justly says: "Heated rooms make children very susceptible of disease,

particularly during the period of teething; and such as are accustomed to immoderately warm rooms will always, when taken into the cold external air, be much more liable to suffer than others, and during cold and humid weather, will seldom be free from coughs and colds."

THE BED-ROOM.

A bed-room should not, if possible, be occupied during the waking hours, especially in winter. If the same room has to be used by day and by night, it is difficult to keep it in a healthful condition, for it cannot be properly cleaned and aired easily with a child in it.

A bedroom should not be small; for if it is the child will likely have to suffer the effects of either close air or draughts. The floor may be uncarpeted, and the less furniture there is beyond what is necessary the better, because the more there is the harder it is to preserve the room free from dust and dirt generally. Curtains about either the bed or windows are seriously objectionable, and the same is true of drapery of all kinds. With multitudes of objects liable to be covered with particles of matter more or less subject to decay in it, a bedroom may be the source of many evils. Hence, it should contain as few unnecessary things as possible, and all that is in it cannot be too frequently cleaned.

Except for very young children the air of a bed-room should not be kept at a temperature above sixty-five degrees.

That NIGHT-AIR is injurious to health is an idea which is still somewhat prevalent. On this important subject I cannot do better than quote the pertinent words of Miss Nightingale. "Another extraordinary fallacy," says she, "is the dread of night-air. What air can we breathe at night but night-air? The choice is between pure night-air from without and foul night-air from within. Most people prefer the latter—an unaccountable choice. What will they say if it be proved to

be true that fully one-half of all the diseases we suffer from is occasioned by people sleeping with their windows shut? An open window most nights in the year can never hurt any one. In a great city night air is often the best and purest to be had in the twenty-four hours." Of course, it is important that there should be no perceptible draughts in the room.

A few words about the presence of FLOWERS in a bed-room may not be out of place. Now, in growing a plant absorbs carbonic acid from the air, but while flowering it exhales a little of this gas. Hence, there is some reason to object to its presence when in the latter state; but the cheering influence of the blossoms far more than compensates for the effects of any carbonic acid which may be given off. A few seem to suffer from the odors of some flowers. In these cases it is generally an ardent imagination which does the work. This is well exemplified by a story, related of a French lady who fancied she could not bear the smell of a rose. One day she fainted on receiving a visit from a friend who carried one. Yet the flower was an artificial one. I really know of no valid objections to the presence of a few flowers in an inhabited room. In winter they may be of great service as the means of supplying moisture to the air.

The use of ARTIFICIAL LIGHT in the bed-room of a child, and, indeed, of any one, should be limited as much as possible, for, as elsewhere pointed out, it is a great source of vitiation of the air. The custom of letting the light be present during the entire night, which prevails to some extent, is wrong; it is prejudicial to the well-being of both body and mind.

BEDS AND BEDDING.

The bed of an infant should be comfortable, but by no means so luxurious as to cause its occupant to be constantly moist with perspiration; for if it be, enervation and sickness will surely be induced. Feathers may be used, but a

mattress of wool, or hair, is preferable. At any rate, the bed should be so firm that the child will not sink in it much. There is little or no need for a pillow, until the child has reached its second, or third year; and even then the bed may be so made that it can be dispensed with. If one be provided for a young child, it should be so tightly filled, whether it be of feathers or something else, that the head will not sink in it, for in early life it is wise to keep this part cool. But, of course, if it be very round and firm the child will likely slide down off it entirely. A feather-bed which is soft renders the part of the body which is in contact with it too warm; it acts just like warm clothing when in excess in spots.

The covering of a bed should be very light, but warm in nature. There are too many who associate the idea of warmth in any material with weight, who erroneously hold that in order to protect the body against cold it is necessary to burden it heavily. If the bed is of feathers less clothes is required than if it be of wool, or hair, or husks, or straw. Besides a coverlet or spread, either blankets or a comfortable of cotton, or of down, or both, may be used, and a sheet, being easily washed, should be placed over as well as beneath the person. The latter is coolest when it is of linen. Comfortables are somewhat objectionable, because they are difficult to keep clean, and also because they are apt to be too impervious to air. A piece of a thick woollen fabric, being capable of absorbing much moisture, should be put under the lower sheet, in infancy. Care should be taken to keep it clean. It cannot, or rather should not, be replaced by oilcloth, or any other water-proof fabric; but there may advantageously be placed under it a piece of such material.

Of course the amount of clothes required on a bed varies with the season of the year, with the temperature of the air, and other circumstances. On the regulation of it no set rules can be given.

Unless to guard against flies or other insects, a canopy should not be placed over the bed of a child, or, indeed, of any one, for it serves to confine the breath, and thus render the air impure.

I may remark that in early childhood the night-dress should be so made as to ensheathe the entire person, from the head down. When made thus there is no risk of exposure to cold. It may be of either woolen or cotton material.

In this connection it is proper to say that none of the clothing worn by day should be kept on at night; it should be all taken off and placed where it will get well aired.

It being necessary that the whole bedding outfit be specially adapted to the age and general condition of a child, I need scarcely say that a CRIB, or some sort of a substitute for it, is indispensable. It should not rock, for rocking confuses and benumbs the mental faculties and deranges the action of the whole nervous system. Let it be placed where the air will circulate freely around it, but not where there are draughts.

THE POSTURE IN SLEEP.

Infants are too generally put to sleep in the supine position. At any age lying on the back is scarcely consistent with sound, refreshing sleep. While resting on the side the weight of the contents of the abdomen does not fall on the large blood-vessels, and consequently does not disturb the circulation of the blood.

In going to sleep soon after eating, which, by the way, it is scarcely right to do, especially if what has been eaten is difficult of digestion, it is better to lie on the right than on the left side, because it is more favorable to the digestive process, the outlet of the stomach being on that side; but except under such circumstances, it is wiser to go to sleep resting on the left side, as it allows the heart to beat somewhat more easily.

In sleep the limbs should be extended; for if they are

flexed to any extent the blood and nervous force cannot circulate freely. For a like reason curving the body forward should be forbidden. Let the head be well thrown back, so as to favor full, free breathing.

In children of all ages the spine is apt to suffer while lying on either side, through placing the head on a high pillow. One should so lie that the spinal column is straight, that is, not curved to the right or to the left. This is a matter of considerable importance.

ON SLEEPING ALONE AND WITH OTHERS.

Except the weather be warm an infant should sleep for a month, or so, in the bosom of its mother, or of some one else; for if it be placed in a bed by itself it will likely be injured by cold, its power of generating heat being feeble. Only when it would disturb the parent so as to harmfully influence her milk should it be taken charge of by another person. After the first or second month it is best for it to sleep alone, until it is at least nearly two years of age.

If a child of two years, or so, is allowed to sleep with others, they should not be very different in age, or otherwise. When two very unlike in size and strength lie together, one is very liable to suffer from too little and the other from too much clothing.

There is certainly reason for the popular idea that it is wrong for the young to sleep with grown up persons. If very young, a child may get crushed to death, or smothered, or injured either by cold or heat; and if not, such companionship will depress the nervous and other energies of the body. Children derive advantage from their natural tendency to be cheerful and playful, and hence, it should not be curtailed by associating closely with adults.

I need scarcely say that a healthy child should not lie with a sickly one. With a restless bed-fellow it is impossible to

sleep well; and with one suffering from a chronic pulmonary, nervous, or other disease, there is a likelihood not only of having the slumbers broken but of becoming diseased.

SLEEP IN INFANCY.

In infancy much sleep is needed, on account of the rapidity at which growth progresses, for growing is an exhausting process.

For the first month, or two, a healthy infant is scarcely ever awake save while it is satisfying its appetite. Under one year and over, keeping awake during the entire daytime, or most of it, is indicative of unhealthfulness. Under this age, if it be in health and be properly trained, it will sleep sufficiently without any forcing.

Except during the first three months, or so, of infancy, sleep should be continuous at night, and during the day, at any age, it should be had at stated hours. The power of habit is far greater than many imagine, and in nothing is it more potent than in respect to sleep. Then, on getting awake, at seven o'clock in the morning, the child should be taken up and be kept awake in the nurse's arms, until about ten, when it should be put to bed for three hours. Waking up at one in the afternoon, it should be taken up as before, and be kept up until about four, when it should be put back in bed. At seven it should be taken up again, and this time it need not be kept up more than an hour, or so. Of course, the time need not be divided in this way precisely. At any rate, eight hours of the twenty-four is sufficient time for children under one year to keep awake. For a child a year old, a single nap by day is enough.

From the tenor of the preceding remarks, it may be inferred that I approve of waking a child when it tends to sleep past the appointed time. There need be no reason to do this often. And here let me say, that it is bad for a child to

be aroused from sleep suddenly, by shaking it roughly, or by making a loud noise. Some of the ancients resorted to music for the purpose.

When a child awakes it is wrong to let it lie in its crib. If it be not taken up and given exercise it will not sleep well, likely, when put in bed again. Moreover, it is only by taking it up when it awakes that the excellent habit of awaking at fixed hours can be maintained.

ON PUTTING AN INFANT ASLEEP.

In putting an infant to sleep during the daytime the room should be darkened. In place of doing this some are in the habit of putting a cover over the crib, and not a few draw the bed-clothes over the child's head; or, in other words, there are people who assist their children to go asleep by stupefying, by poisoning them with their own breath. Let its clothing be removed, or, at any rate, be loosened; for a very slight feeling of restraint may prevent sleep from occurring.

As I have already hinted, it is wrong to rock an infant to sleep; and the same is true of shaking of any kind, for the purpose. The whole system, but especially the brain, may be injured by such usage. And I may say that it is unwise to put a child asleep habitually in one's arms. If this is done for a while it will be afterward expected.

I need not say that I disapprove of scolding, or beating a child to induce it to sleep. It is not through abuse of any sort that rest of a refreshing nature can be won, and no one possessed of proper sentiments would resort to such means.

The most reprehensible of all ways of putting children asleep, is by drugging them with paregoric, laudanum, or the abominations called soothing-syrups, which the love of gain impels those who vend them to vaunt as blessings. The amount of harm done to the young in this way is simply incalculable. I hope none of my readers can be accused of

the inhumane and criminal practice. Those who indulge in it are Herodian monsters. Although their hands may not be covered with blood, they are destroyers of life.

A child should not be induced to sleep, as a rule, by any artificial means. But if any is resorted to, a melodious lullaby is, perhaps, the best. If inclined to be very restless, a moderately warm bath may be useful, but this measure should not be taken advantage of, except under urgent circumstances. If a child is duly exercised during the hours which it should be awake it will generally go to sleep readily, as soon as it is placed in its crib. If restless from sickness, remedies for the latter are in order.

HOURS OF SLEEP FOR THE YOUNG.

Boys and girls should be taught the habit of going to bed early and getting up early. One-third of the twenty-four hours is certainly enough for any but children under three years of age to spend in sleep. Those who lie in bed while the sun is shining are wasting time. Nor can they sleep soundly then; they can only doze, and much dosing begets laziness and stupidity. Let the late-riser listen to the words of the poet, Herrick—

“Get up thou slug-a-bed and see
The dew-bespangled herb and tree;
Each flow’r has wept and bow’d towards the East
Above an hour since; yet you are not drest—
Nay, not so much as out of bed.
When all the birds have matins said,
And sung their thankful hymns, ’tis sin—
Nay, profanation—to keep in.”

DREAMING, NIGHTMARE AND NIGHT-TERRORS.

The sleep of children, and especially those of a nervous temperament, may be broken by dreams, or nightmares, or night-terrors, all of which are closely related in nature. When

in perfect health none of these things occur, except when the child goes to sleep in a state of excitement, or lies in an improper position. Lying on the back is the usual cause of nightmare. Some intestinal derangement is often the cause of night-terrors, which seems to be far more distressing than even nightmare, which Virgil incidentally describes as follows :—

“And as when heavy sleep has closed the sight,
The sickly fancy labors in the night,
We seem to run, and destitute of force,
Our sinking limbs forsake us in the course;
In vain we heave for breath, in vain we cry,
The nerves unbraced, their usual strength deny,
And on the tongue the faltering accents die.”

In the night-terrors the child awakes suddenly and in a state of alarm, and issues a piercing cry. Sitting up, he uses repeatedly expressions indicative of fear, and continues in this position until the terror subsides, which it generally does in ten or fifteen minutes, when he lies down and lapses speedily into sleep again. Sometimes, however, the attack terminates in a fit of passionate crying and sobbing. If the cause continues, repeated attacks occur, but it seldom afflicts any child often.

As soon as a child is seen to suffer from night-terrors he should be taken out of bed and aroused. No medicine is required, but a teaspoonful of camphor-water may be given. To prevent a recurrence of the trouble, a dose of castor oil, or magnesia, is generally all that is required.

SECTION II.

CHILDREN IN SICKNESS.

CHAPTER I.

GENERAL REMARKS ON CARING FOR THE SICK.

While in health, it is important that children be cared for properly; but when sickness is present it is a still more pressing duty. And necessary as intelligence is in caring for the well, it is, if possible, much more so in caring for those that are sick.

The mother, or attendant, who has charge of a suffering child, should realize that she has a weighty responsibility resting on her, that she has a duty to perform, the right discharge of which calls for knowledge, practical skill, and faithfulness. To the ignorance, want of tact, and negligence of those to whom are given the grave trust of bringing up the young, may, as I have already hinted, be attributed a considerable percentage of the deaths which occur in early life. Instructed, discerning eyes should watch over them from birth, so carefully that disease cannot develop unrecognized, for timely action only, as a rule, can be effective, either in warding off illness or in removing it.

A mother should be able to identify all the morbid conditions which may appear among children, and be so familiar with the nature of each as to be capable of bringing all the resources of the art of nursing to bear for its removal, as well as to know whether or not it can be benefited by any remedies of a medicinal character which she may safely venture to

administer. Mothers who are without such knowledge cannot do their duty to their offspring, and they are likely to be often in a painful state of anxiety. I do not mean, however, to convey the idea that every mother should be, or have an ambition to be, a doctor; for the art of medicine is too difficult to be understood thoroughly without prolonged special study. A pretence to medical skill may be the cause of disaster in many cases, for it may lead to delay in calling in proper assistance and to such drugging as will aggravate the evil present and possibly be in itself dangerous to life. I would have every mother be simply a competent nurse. I join Dr. Chavasse in saying, "I am not advocating the doctrine of a mother treating serious diseases; far from it; it is not her province, except in certain cases of extreme urgency, where a medical man cannot be procured, and where delay might be death; but I do insist upon the necessity of her knowing the symptoms of disease. My belief is that if parents were better informed on such subjects many children's lives might be saved, much suffering might be averted and much sorrow might be spared. The fact is, the knowledge of the symptoms of disease is to a mother almost a sealed book. If she were better acquainted with these matters how much more useful would she be in a sick room, and how much more readily would she enter into the plans and views of the medical man. By her knowledge of the symptoms, and by having his advice in time, she would nip the disease in the bud, and the fight might end in favor of life; for sickness is just a fight between life and death."

It is hard to lay down any rule as to when it is wise to procure professional advice in caring for the sick. A very simple illness may be attended with such symptoms as will throw a mother of average intelligence into a state of great alarm, while one of serious import, but with few, or no, striking features, may be neglected until it has seized on its

victim with the grip of death. It is only by a careful study of the manifestations of the several morbid conditions that their gravity can be estimated. However, I may say, that any illness which may be dangerous to life, and any which is not clearly understood, as to both its nature and management, should receive special medical attention as soon as possible.

The choice of a physician is a very important matter—a matter which should be carefully considered. If the nearest one is known to be an educated, moral man of good common sense, get him, and continue to employ only him whenever necessary; for it is only the physician who is in attendance habitually who can thoroughly understand the constitutions of the members of a family. Pay him promptly for his services, treat him kindly, and endeavor in all proper ways to enlist his interest in and devotion to the welfare of you and yours. In him a family may find its best friend.

Have nothing to do with “doctors” who vaunt of their superior acquirements and skill in newspapers; for all such are impostors and knaves; they are quacks. Shun them, no difference what they may declare themselves able to do; for how to get your money is their only concern. Let none of my readers show by their conduct that, as is remarked by Bacon, “the weakness and credulity of men is such as they will often prefer a mountebank, or witch, to a learned physician.”

There can be no objection to employing a female physician, if she is well educated, sensible, discreet, and physically capable of attending to the duties of the profession. It is said by Plato, I believe, that some women are fitted to be physicians and some are not; and the same is true of men. Hence it may be wise to choose a female physician in preference to her competitor for favor, of the other sex; but generally speaking this is not the case.

As to selecting a physician of this or that school of medi-

cine, I would remark, that regular or scientific physicians are guided in their practice by no creed ; they draw their knowledge from the recorded experience of the people of all ages, and they do for each case they are called upon to treat whatever they have reason to believe will do good. To speak of them as "doctors of the old school," or as "allopaths," is a mistake. Their plan of treatment, however, is largely allopathic. That great medical leader of antiquity, Hippocrates, whom Pliny calls "The Prince of Physicians," and who is now very properly regarded as the father of medicine, in his celebrated "Aphorisms," expresses it thus : "Diseases which arise from repletion are cured by depletion, and those that arise from depletion by repletion ; and in general diseases are cured by their contraries." The so-called "doctors of the new school" or "homœopaths" are disciples of an acute reasoner, but not a practical physician, a German, named Hahnemann, who died at Paris in 1843. They believe that, as said by their oracle in the book in which he propounds the system, in the "Organon," "it is solely the morbidly affected vital principle which brings forth disease," and that in practice they should always employ "medicines which produce symptoms similar to those of the malady." A great peculiarity of their method, in its pure form, consists in the use of infinitesimally small doses of medicine. But homœopathy is not strictly followed by many ; and nearly all scientific men regard it as a delusion. I may say of it that for cases which require only regulation of the regimen, cases which require little or no medicine, or in other words the great majority of cases, it does well enough ; but for all others it is not right to depend on it. "Herb doctors," "Indian doctors," "doctors" who profess to cure all diseases by electricity, spiritualistic "healers," and various other irregular medical practitioners are, as a whole, simply mercenary pretenders ; and consequently, every one possessed of the smallest

modicum more of sense than an average idiot should be wise enough not to place any confidence in them, or to have anything to do with them.

Having called in medical aid, follow implicitly the directions given, especially as to how and when the medicines prescribed are to be administered ; for as Dr. Benjamin Rush, the father of American medicine, remarks, "the neglect in patients to make use of the remedies of their physicians at the time and in the manner in which they are prescribed is a frequent cause of death in curable diseases." But let it be remembered that besides prescriptions a physician should be expected to give full instructions as to the regulation of the diet, the clothing, the atmosphere, and the conditions generally. As observed by the late Sir Henry Holland, one of the wisest of physicians, "the prescription of the physician, however learned in its Latin and pharmacy, is but a slender part of his professional duty ; of far greater import generally to his patient is his watchfulness over the economy of the sick chamber, its temperature, ventilation, cleanliness and quiet ; the various appliances even of change of posture fitted to relieve pain and procure rest—all that the *lenis sermo* and *hilaris vultus* (I willingly quote from Celsus) can justifiably do in soothing and giving hope." And once a system of treatment is instituted, let it be persisted in. There is no reason to lose confidence in the physician if the patient does not improve from the moment he begins to attend ; for the disease may not have been fully developed when his remedies were begun with. Nor should it be forgotten that in some cases death will occur in spite of all that can possibly be done. If the state of the patient is critical let the physician call in another in consultation. But I may say that it is not wise to call in a second physician, unless in presence of great danger ; for in medicine, as in everything else, division of responsibility is not advantageous, as a rule.

It may not be amiss to say that in caring for her sick child, or children, a mother should not pay much attention to the advice which she is likely to receive from nearly every one with whom she converses. Each of her particular friends, doubtless, will tell her how a cure was wrought in a certain similar case, and will hint that it would be well for her to do the same thing. If she is not on her guard she will be induced to try all sorts of experiments. Her physician will come in for plenty of criticism, if the case on hand is severe, but she should be very deaf to it. Should she give ear to what will likely be said to her, she will certainly become distrustful of his method of treatment, and will probably get another in his place. Now, if she discharges him, it is extremely probable that she wrongs both him and her child. It is generally bad for a patient to be taken charge of by a new doctor in the midst of his illness, because it is disturbing to him, and because it takes some time to discover personal peculiarities in respect to the action of remedies.

CHAPTER II.

THE PREVENTION OF DISEASE.

Preliminary Remarks—The Mode of Life, and Disease—Seasonal Changes, and Disease—Preventable Diseases—Medicines as Preventives of Disease—Amulets as Preventives of Disease—Disease as its Own Preventive—Inoculation—Vaccination.

PRELIMINARY REMARKS.

Happily, the belief that disease is of supernatural origin no longer exists. While it was regarded as the result of other than natural causes a resolute desire to prevent it could not prevail. Knowing that it, in all its forms, springs only from physical conditions which are more or less subject to human control, the question of its prevention is one of very great importance. This art is one of pre-eminent significance. Compared with it the art of curing disease is of secondary consequence.

It must not be supposed that there is a material something, the presence of which in the system constitutes every disease. Indeed, nearly all diseases are essentially changes in the functions, or structures, or in both, of the body. I would, then, advise those who may hold that through medicines every disease may be either antidoted or forced out of the system, to at once lay aside this idea, as it is entirely erroneous.

THE MODE OF LIFE, AND DISEASE.

The greatest of all causes of disease is, living in a manner contrary to the laws of health. It is in this way that the body is gradually, if not abruptly, reduced, deranged, and

otherwise prepared for acute and other diseases. The cause may be so slight that it may be at play for years before there is any perceptible manifestation of evil. One may drink impure water, or breathe foul air, for a long time without suffering any, apparently, but, nevertheless, inroads are made on the system which will cause it to yield easily to influences which might not otherwise produce serious mischief. A running down of life force is the true cause of an enormously large proportion of premature deaths. In a late Report of the Board of Health of Philadelphia, it is said: "Contagious diseases, though at times very destructive to young life, cause few deaths in comparison with the diseases which arise from causes depending upon the use of improper food and the neglect of hygiene. The privation of breast-milk, and the substitution of artificial food of improper kind, and the use of unsuitable food in the later months of infancy, are a very prolific source of disease. Insufficient and unsuitable dress, both in summer and winter, but especially in the latter season, is without doubt accountable for a considerable proportion of the deaths that occur among the young. The want of proper ventilation and cleanliness in the over-crowded homes of the poor; insufficient and defective drainage, and the absence of fresh air and sunlight, are all serious evils, which cannot fail to affect prejudicially the health of such as are exposed to their influences, particularly those of a tender age." Beyond all question, sanitary living is the chief preventive of disease.

SEASONAL CHANGES, AND DISEASE.

Compliance in clothing, food, and mode of life in general, with the requirements of atmospheric changes, is a potent means of preventing disease. I have already said a good deal on this subject, but as showing, in a manner, the great importance of it in early life, I will quote a few passages from one of a series of articles on the relations of aerial conditions

to the death-rate in Philadelphia, contributed by me, in 1879, to the *Medical and Surgical Reporter*, a well-known weekly journal published in that city.

“The most marked feature of the infantile mortality is its excess in the heat of summer—it is over four times more in July than in November. From the falling off in the number of deaths in the autumn months, an increase begins in December, which augments until toward the end of the month, when a slight decrease is observable, which lasts until near the end of May, the time in which the great summer fatality begins. It is more than probable that the autumn months present a better showing than they deserve; for the reason that the very trying influence of the two months which precede has cut off most of the feeble children. Moreover, the whole number of children under one year of age is less then, especially in November; less, I believe, than at any other period of the year. Perhaps, on the whole, the spring months are the most favorable to the infant population.”

“The bulk of the mortality of children between one and two years of age occurs in the warm months. The mortality in July is nearly three times what it is in October. The effects of the warm season are almost as manifest here as with younger children, the relative number of deaths being almost as great.”

“Between the ages of two and five, the month of greatest mortality is January; cold now, and not heat, which has so marked an effect up to this period, is most fatal. The fatal influence of heat, however, is still apparent. During this period and in every succeeding one there is a notable October increase in the death rate.”

“Between five and ten the effect of heat is imperceptible, but the reverse is true of cold. Least deaths occur in August, and most in January (same in June).”

“From ten to fifteen, as well as from fifteen to twenty, and

in each succeeding decade, the bulk of the mortality occurs in the spring and early summer months."

PREVENTABLE DISEASES.

Pestilential diseases or those which prevail extensively at times and are communicable by contagion, or infection, are the ones usually referred to when preventable diseases are spoken of. This limitation of the word preventable I do not like. These destructive diseases, however, deserve to be combated with special earnestness and power. More will be said in regard to them in the succeeding chapter.

MEDICINES, AS PREVENTIVES OF DISEASE.

Of medicines as preventives of disease I need say but little more than that they are of value chiefly in so far as they may favor health and strength of body and mind. Such of them as will serve to invigorate the system will serve to render it less liable to become disordered. Certain of them possibly are capable of preventing certain diseases from arising because of their being possessed of special virtues. But on this subject very little is known.

AMULETS, AS PREVENTIVES OF DISEASE.

Amulets have, perhaps, always been in use for the prevention of disease. A red string worn around the neck has been, since the Middle Ages, regarded by not a few as a shield against a large number of "the ills that flesh is heir to." A chestnut carried in the pocket is believed by many to be a certain preventive of rheumatism. Sachets or little bags of sulphur and various other substances are not a little used to ward off infectious and contagious diseases. Among the "pads" of all sorts which impostors are now trading in largely, the credulous may find some not only for the purpose of preventing, but of curing nearly all diseases.

Now, it is certain that amulets do serve, in a measure, to prevent disease. Anything which inspires confidence and hope, is sanative in its effects. Faith is a powerful healer. Of course, it is irrational to hold that the things in question act otherwise than through the impression made by them on the mind.

DISEASE, AS ITS OWN PREVENTIVE.

Most pestilential diseases have this peculiarity, that one attack renders the system almost proof for life against another. Why this is so, I cannot say, but it would seem to be due to a change of a lasting nature in the constitution. Careful study of the subject may in time enable us to bring about the change in a simple way artificially. In the case of small-pox, a disease which in other days was horribly destructive to life, this can be done, in a manner, either by inoculation or vaccination, two operations of which I will now speak.

INOCULATION.

By inoculation or ingrafting is meant the production of small-pox, or indeed any disease, in a person by introducing into the system through an abrasion of the skin the matter or virus found in the eruption of one suffering from it. The attack of the disease thus induced is relatively very mild.

Inoculation was long practiced in Eastern lands before it became known in Western Europe. In the latter part of the world it was unheard of until 1717. In that year it was brought to the attention of the English people by Lady Wortley Montague, who learned of it while living in Constantinople with her husband, who was Ambassador from Great Britain. Her first letter about it was addressed to the poet, Pope, and dated April 1st. After giving an excellent account of it, the heroic young woman (she was only twenty-six) says, "You may believe I am well satisfied of the safety

of this experiment since I intend to try it on my dear little son. I am patriotic enough to take pains to bring this useful invention into fashion in England." The practice of it was bitterly opposed, but it was in time resorted to extensively. It is now prohibited by law in most countries, because it may be the means of spreading the disease, as others may catch it from the person operated on. It was destined to be replaced by vaccination, against which no such objection can be raised, and which as fully protects the system, without giving rise to any serious disturbance of it.

VACCINATION.

Vaccination is an operation similar to inoculation save that the virus is not obtained from the small-pox pustule but from that of an allied disease which occurs in the cow. It was discovered by an observing scientific physician, Dr. Edward Jenner, while practicing his profession in Berkeley, Gloucestershire, England, toward the end of the last century. His attention was directed to the matter by reports that milk-maids who had been infected with the cow-pox were not subject to small-pox. After being convinced of the truth of this fact it occurred to him that the virus from the artificial pustule also would serve as a preventive of small-pox. In this connection the following letter to a friend is of interest:—

"DEAR GARDNER:—As I promised to let you know how I proceeded in my inquiry into the nature of that singular disease, the small-pox, and being fully satisfied how much you feel interested in its success, you will be gratified on hearing that I have at length accomplished what I have been long waiting for—the passing of the vaccine virus from one human being to another by the ordinary mode of inoculation. A boy of the name of Phipps was inoculated in the arm, from a pustule on the hand of a young woman who was infected by her master's cow. Having never seen the disease but in its

casual way before—that is, when communicated from the cow to the hand of the milker—I was astonished at the close resemblance of the pustules, in some of their stages, to the variolous pustules. The boy has since been inoculated for the small-pox, which, as I ventured to predict, produced no effect. I shall now pursue my experiments with redoubled ardor.

“Believe me ever yours sincerely,

Berkeley, July 19th, 1796.

“EDWARD JENNER.”

The great discoveries of Dr. Jenner did not meet with favor when communicated to the world; on the contrary, they were denounced in unmeasured terms, by people generally. It was accounted by them as nothing short of horrible to infect man deliberately with a beastly disease. But he lived long enough (he died in 1823) to have the pleasure of knowing that posterity would always regard him as one of the very greatest of benefactors of the human race. That his discoveries were soon appreciated by at least some in this country, is evident from the following interesting letter:—

BOSTON, 13th July, 1802.

SIR:—I have the honor of enclosing herewith a certificate of your election, by a unanimous vote, as a member of the American Academy of Arts and Sciences. And in transmitting this testimonial of respect of my countrymen, I am sure of expressing their sentiments when I add that never since the institution of this Society have its members enjoyed a more genuine and universal satisfaction by the accession of a new associate than when they acquired the privilege of reckoning among their members the name of Dr. Jenner.

I am, very respectfully, your very humble and obedient servant,

JOHN QUINCY ADAMS,

*Corresponding Secretary of the American Academy
of Arts and Sciences.*

The protective power of vaccine matter obtained directly

from the cow is not much, or perhaps no, greater than that obtained from the pustule produced by it on any part of the human body. Both are thoroughly efficacious. The following remarks from the official report of the physician (Dr. W. M. Welch) who had charge of the public hospital in which small-pox cases were treated, during the extensive epidemic of the disease, in 1871, in Philadelphia, are worthy of perusal: "It would seem at first sight almost like a work of supererogation to collect statistics at this late day to prove the prophylactic virtue of vaccination; yet the ignorance concerning the benefits to be derived from this measure, especially among the lower order of society, is lamentably great. This ignorance not unfrequently gives rise to a prejudice against vaccination, which, we regret to say, cannot be overcome by statistical proof, however conclusive. What is needed, therefore, to bring protection to all classes of the community is a law making vaccination compulsory. The innocent offspring of ignorant and improvident parents especially require the enactment of such a law for their protection. It was no uncommon occurrence, during the prevalence of the epidemic, to admit children in whom the taper of life was barely flickering in the socket, soon to become extinguished by a disease eminently preventable, who, when asked why vaccination had not been performed, would plaintively reply, 'Father didn't believe in vaccination,' or, 'Father thought vaccination foolishness.' In one instance the very singular reply was given, 'Mother says she left me for God to vaccinate.' This reminds us of the gross ignorance and superstition which were exhibited by some in the days of the immortal Jenner, when vaccination was declared as taking power out of God's hands. It was said by some of the rash opponents of the art that God had seen fit to afflict the race with small-pox, and it was therefore impious to interrupt it with cow-pox."

Experience shows that the protective power of vaccination

against the contraction of small-pox lessens in time. On this point Dr. Welch says: "We have adduced, we think, facts sufficient to prove that the susceptibility to small-pox, which is destroyed for some years in vaccinated persons, returns and progressively increases, up to a period undetermined, with the distance of time from the primary vaccination. The susceptibility to second vaccination returns, we believe, in the same ratio. The logical inference, then, is that vaccination will exhaust the returning susceptibility to small-pox. Fortunately this is not only beautiful in theory, but has been found to be the fact, as existing records show, whenever re-vaccination has been practiced. The rare occurrence of small-pox after successful re-vaccination, and the exceedingly rare occurrence of death from that disease after the latter, places its practical efficacy beyond question." Of the twenty-three hundred and seventy-seven cases of small-pox which were under the care of the Doctor during the epidemic in question, only thirty-six were said to have been re-vaccinated, and of these, four died. Evidently it is wise for every one to get vaccinated a second time. If it is not needed the matter will not take. There is no ground, however, for the popular idea that it should be repeated every seven years.

As to the idea that there is danger of becoming infected with certain blood diseases through vaccination with humanized matter, I would say that there is no substantial basis for it. The eruptions, or any manifestations of disease, which follow the operation in rare cases, would in all probability appear at any rate. Still it is well to obtain the matter from healthy children only.

A child should be vaccinated about three months after birth, for at this period the irritability of extreme infancy is over, and the irritation produced by dentition has not appeared. If an epidemic of small-pox be prevailing, the operation should be performed at once, regardless of age. If

the child be sickly and there are no small-pox cases near, vaccination may be postponed until health is restored.

Vaccination may be performed on any part of the body; but the arm is generally selected on account of being the most convenient. The matter need not necessarily be applied at more than one point, but it is not amiss to have it at two. The skin must be sufficiently abraded, but no bleeding should be produced. Let the arm be kept still for half an hour, or so, after the operation.

On the second day after vaccination the puncture should be somewhat elevated; on the third or fourth a small, red pimple should be present; on the fifth there should be a distinct circular vesicle with a projecting edge and a depressed centre; on the eighth the vesicle should be distended with clear matter or lymph; and on the ninth and tenth the vesicle should become transformed into a pustule, and be surrounded by an inflamed ring from one to three inches in diameter. After the tenth day both the pustule and the inflammation should begin to decline. The scab falls off about the twenty-first day. The cicatrix should be well marked.

Vaccination generally gives rise to but little disturbance of the system. Occasionally, about the eighth day there is some fever and the bowels are disordered. About the tenth day an eruption appears, in some cases, beginning on the extremities, and extending to the trunk. As a rule, the constitutional symptoms are less when humanized matter is used than when it comes directly from the cow. Beyond a dose of castor oil, or magnesia, no medicine is required. If the arm is greatly inflamed it may be bathed frequently with lead water, or ordinary water, moderately cold. To the vesicles a flaxseed-meal poultice may be applied to advantage sometimes.

CHAPTER III.

CONTAGION AND INFECTION.

Preliminary Remarks—The Nature of Contagion and Infection—Temperature, and Contagious and Infectious Diseases—Nursing, and Contagious Diseases—Disinfectants, and Contagious and Infectious Diseases.

PRELIMINARY REMARKS.

Being prime causes of much disease of a very serious nature, contagion and infection are deserving of particular study. By exercising all possible precautions to limit their dissemination, the death-rate of any community can be greatly lessened. It is against them that the chief efforts of public health officers and sanitarians are aimed.

By contagion is meant the agent by which any disease is communicated from a person suffering from it to one that is well; and by infection, any cause of disease which may exist in the air or elsewhere, which is not of personal origin. Measles is a contagious disease; fever and ague is an infectious one, and scarlet fever is contagious, according to some authorities, infectious, according to others, and both contagious and infectious according to not a few. I may say, however, that many now apply the term infectious to all diseases dependent on specific causes, except those which arise through inoculation, or as Dr. George Wilson, who is a leading sanitarian of England, puts it, “‘Infection’ and ‘contagion’ are now used as synonymous terms, or at all events, are used indiscriminately, and are intended to convey the same meaning.”

An epidemic disease is, properly speaking, one the prevalence of which is due to contagion, and an endemic disease is one the prevalence of which is due to infection. It is usual

not to apply these terms to any but severe outbreaks of disease, and the former only is used by all, except some medical men and others, who are careful in the use of language.

THE NATURE OF CONTAGION AND INFECTION.

Of the nature of contagion and of infection our knowledge is incomplete. In harmony with the definitions given above contagion may be regarded as of an animal, and infection of either an animal, or a vegetal, or an inorganic character. However, it is certain that both have substance, that either is a material, a tangible thing. He must be a very loose and unphilosophical thinker who can look on pestilential disease of any kind as originating without a physical cause. Any tendency in this direction which may exist is a relic of an unscientific age, a remnant of the mode of thought of the superstitious Romans, who erected on the Palatine Hill a temple to the Goddess of Fever. The plague which raged in the Grecian army, and which is described by Homer, is attributed by him to Apollo—

“ Latona’s son a dire contagion spread,
And heaped the camp with mountains of the dead.”

We, too, hold that as the influence of the sun is essential to all vital activity, “his darts inflict the raging pest;” but there must be a medium, or the disease is not pestilential; it is simply a condition induced by heat, or cold, or some perversion of the state of the air, or the food. This was clear to Thucydides, who described the Athenian plague, as well as to Aræteus and Galen, among ancient physicians; and from much that is contained in the code of hygiene of Moses, who was versed in the learning of the Egyptians, it is likely the idea is very old. But when not a gas or mineral infection, is this agent of disease, this *materies morbi*, a mere exhalation, or is it a specific organism? Numbers

of medical philosophers now hold that it is a living, self-propagating entity, a unit in creation, just as a dandelion or a house-fly is, and that it never originates of itself, spontaneously. Against this germ theory of disease some objections can be raised. It would be rash to fully accept it, because the possible properties of particles of organic matter of different kinds are, as yet, but very imperfectly known. Thus, neither a pollen grain nor an ovule of any flower is a seed from which a plant will grow; the two must unite before the complete germ is developed. The minute organisms which some microscopists have discovered in the secretions or excretions of patients may be the results of disease, and not causes.

TEMPERATURE, AND CONTAGIOUS AND INFECTIOUS DISEASES.

Contagious diseases prevail most, perhaps, in the colder half of the year; while those of an infectious nature prevail most in the warmer half. When the temperature of the air falls to, or near the freezing-point, infectious diseases of aerial origin abate and stop; but the cold seems to favor the spread of contagious diseases. Now, as a freezing temperature stops all activity in particles of organic matter which may be in the air, it, of course, in this way shears infection of its baleful power; and it necessarily also has a similar effect on contagion. The greater prevalence of contagious diseases in cold than in warm weather may be due, in a degree, to the system then being naturally in a condition more favorable to their development; but I believe it is largely attributable to a difference in the social behavior of the people. When it is cold people confine themselves more closely to their homes than when it is warm; and with the closer confinement, the crowding, there is generally a vitiated atmosphere, which depresses vitality. Were it not for the influences at play within doors, it is very likely that contagious as well as infectious diseases would subside in very cold weather.

NURSING, AND CONTAGIOUS DISEASES.

From what has been said above, it may be inferred that infection must be combated mainly through attention to the general sanitary conditions, and contagion through not only the general sanitary conditions, but also the mode of nursing of the sick. The latter method of curtailing contagion cannot be over appreciated.

As the majority of children seem to be destined to suffer from measles, scarlet fever, and a number of other contagious diseases, very little precaution is exercised, as a rule, to stay their progress in any community. This negligence is of too serious a nature to be fitly characterized. Every child need not necessarily have scarlet fever, or any contagious disease; and it is nothing short of criminal for not only public authorities, but the head of a house to let such diseases prevail as they may. Of the means which should be brought to bear by the latter to prevent their spread I will now speak.

As soon as a person is attacked with any disease of a contagious nature, he should be at once placed in an apartment into which at least all who are liable to contract it, that is, all who have not had it, shall be forbidden to enter. A room immediately under the roof is the best, and the larger and more easily ventilated it is the better. It should contain no furniture of any kind, beyond what is absolutely necessary, namely, a bed, a table, and a chair, or two. I need not say that not an inch of carpet, or of drapery should be allowed in it. Cleanliness being of great importance, not a particle of dirt which can be removed should be tolerated in it for a moment. It is well to keep the temperature down to and preferably far below fifty degrees, not only because the activity of contagion is checked by cold, but because the patient is likely to be benefited by the cold air, it being anti-febrile in its effects. In referring to certain ideas which prevail in regard to the care of patients suffering from contagious

diseases, Dr. West says, "There is an over-dread of catching cold, and the room is, in many cases, kept, in consequence, both hot and ill ventilated. When children are suffering from measles, it is, indeed, well to keep the room at a temperature of about sixty degrees; but in other fevers the temperature should not exceed fifty-five at the utmost. Be the temperature that is considered necessary what it may, it is not to be maintained by excluding fresh air from the apartment, and making the child breathe over and over again that which has already been made impure."

As contagion may be conveyed from place to place by means of the clothing, a person who undertakes to nurse a patient affected with any contagious disease should be dressed very plainly and with such fabrics as are least likely to catch and retain particles of matter. Hence, woolen goods should be avoided as much as possible, and those of linen, or of cotton, especially if highly calendered, should be preferred.

DISINFECTANTS, AND CONTAGIOUS AND INFECTIOUS DISEASES.

In speaking of the nursing of cases of contagious diseases, I said nothing of the use of disinfectants in the sick-room. Nor are any required if the instructions which I gave be strictly followed; but there can be no objection to placing in it a plate containing a teaspoonful, or two, of chloride of lime with a little water, every morning. Instead of the lime, half a teaspoonful, or less, of carbolic acid may be similarly used.

Disinfectants, however, are of service in many ways in the prevention of contagious and infectious diseases. Their value has been appreciated from an early date. They are spoken of by Homer in very explicit terms, in such a way as to make it clear that the old Greeks realized their use. Thus he represents Ulysses, after returning from his ten years of

wandering, as purifying his dishonored palace with fire and sulphur—

“ With fire and sulphur, cure of noxious fumes,
He purg’d the walls and blood-polluted rooms.”

In respect to them I will favor my readers with the Report of a Commission of distinguished chemists and sanitarians, appointed in 1879, by the National Board of Health of the United States, to prepare familiar instructions for their use. It is as follows: “ Disinfection is the destruction of poisons of infectious or contagious diseases. Deodorizers are not necessarily disinfectants, and disinfectants do not necessarily have an odor.

“ The disinfectants to be used are first, roll sulphur for fumigation; second, sulphate of iron (copperas) dissolved in water in the proportion of one and a half pounds to the gallon, for soil, sewers, etc.; third, sulphate of zinc and common salt dissolved together in water, in the proportion of four ounces of the sulphate and two ounces of salt to the gallon, for clothing, bed linen, etc.

“ The Commission exclude carbolic acid, for the reason that it is difficult to secure the proper quality, and it must be used in large quantities to be of service.

“ In using disinfectants in the sick room the most available agents are fresh air and cleanliness. The clothing, towels, bed-linen, etc., should, on removal from the patient, and before they are taken from the room, be placed in a pail, or tub of the zinc solution, boiling that, if possible. All discharges should either be received in vessels containing copperas solution, or when this is impracticable, should be immediately covered with copperas solution. All vessels used about the patient should be cleaned with the same solution. Unnecessary furniture, especially that which is stuffed, carpets and hangings, should, when possible, be removed from the room

at the outset, otherwise they should remain for subsequent fumigation and treatment.

"Fumigation with sulphur is the only practicable method of disinfecting a house. For this purpose the rooms to be disinfected must be vacated. Heavy clothing, blankets, bedding and other articles which cannot be treated with zinc solutions, should be opened and exposed during fumigation, as directed below. Close the room as tightly as possible. Place the sulphur in iron pans, supported upon bricks placed in tubs containing a little water; set it on fire by hot coals, or with the aid of a spoonful of alcohol; and allow the room to remain closed for twenty-four hours. For a room about ten feet square, at least two pounds of sulphur should be used; for larger rooms proportionately increased quantities.

"Cellars, yards, stables, gutters, privies, cesspools, water closets, drains, sewers, etc., should be frequently and liberally treated with copperas solution. The copperas solution is easily prepared by hanging a basket containing about sixty pounds of the copperas in a barrel of water.

"It is best to burn all articles which have come into contact with persons sick with contagious or infectious diseases. Articles too valuable to be destroyed should be treated as follows: Cotton, linen, flannels, blankets, etc., should be treated with the boiling zinc solution. Introduce piece by piece, secure thorough melting, and boil for at least an hour. Heavy woolen clothing, silks, furs, stuffed bed-covers, beds, and other articles which cannot be treated with the zinc solution, should be hung in the room during fumigation, their surfaces thoroughly exposed and pockets turned inside out. Afterward they should be hung in the open air, beaten and shaken. Pillows, beds, stuffed mattresses, upholstered furniture, etc., should be cut open, the contents spread out and thoroughly fumigated. Carpets are best fumigated on the floor, but should afterward be removed to the open air and

thoroughly beaten. Corpses should be thoroughly washed with a zinc solution of double strength and buried at once. Metallic, metal-lined, or air-tight coffins should be used, when possible, certainly when the body is to be transported any considerable distance."

In submitting this Report the Chairman of the Commission, Prof. C. F. Chandler, of New York, said, "It has been the aim of the Commission to prepare concise directions for disinfection, so simple and clear that they may be easily followed by any person of intelligence. In the selection of disinfecting agents the aim has been, first, to secure those which can be relied upon to accomplish the work; second, which can be procured in a state of comparative purity, in every village in the United States; third, so cheap that they can be used in adequate quantities. The people must be instructed that no reliance can be placed in disinfectants simply because they smell of chlorine, or carbolic acid, or possess the color of permanganate of potash (a rich purple), and that in general proprietary disinfectants with high-sounding names are practically worthless."

CHAPTER IV.

THE NURSING OF THE SICK.

*Preliminary Remarks—On Discovering the Disease Present—
The Sick Room—Mental Care in Sickness—On Giving
Medicine and Food—On Observing the Features of Dis-
ease—Bodily Temperature in Disease.*

PRELIMINARY REMARKS.

The nursing of sick children is not, as a rule, a pleasant duty, but it is one which should be performed cheerfully, carefully and faithfully. When ill all children are apt to be irritable and hard to please. To attend gently and patiently to many a little sufferer one must have the love which a mother only can possess. It is very essential, then, that the person who undertakes to nurse a child through a severe illness should undertake the work voluntarily, and fully resolved to do her best until the end.

As ministering to the sick is wearisome to both body and mind, this duty should not be attended to by a very feeble person, except the illness is of a temporary nature. A nursing mother should avoid it, for the sake of the infant at her breast; for anxiety and want of sleep will seriously affect her milk. Many a child is ruined in this way.

From what precedes the reader may infer that I hold that the duty of nursing the sick should not be divided. The patient who is cared for by more than one is apt to be cared for badly. Let the nursing of every case of severe illness, then, be regarded as a labor which requires the attention of a special individual, and let that individual be responsible for the manner in which it is performed.

ON DISCOVERING THE DISEASE PRESENT.

As soon as a child begins to show some signs of illness he should be watched closely, so that the disease may be identified as early as possible, for while what ails him is not known no definite line of action can be marked out, or pursued. And it often takes time to do this. As a distinguished physician of Philadelphia (Dr. Weir Mitchell) said recently, in an article in one of the monthly magazines, "many diseases begin with the same symptoms, just as many words begin with the same letters; each added letter helps us to identify the word, and each additional sign helps to indicate the malady, until doubt ripens to certainty, and we know at length what foe we have to deal with." Of course, in order to be able to always know precisely what disease is present it is necessary to have a general knowledge of the features of each of those which may occur; which knowledge the reader may gather largely from other chapters of this work.

The fact that young children cannot tell anything of their feelings makes it especially difficult to discover what their ailments are. In them the features and the cries should be carefully observed. From these it is possible to say whether or not the trouble, if severe, is seated in the digestive organs, the lungs, or the brain—the three great divisions of the body which are particularly liable to become diseased. If the affection is in the digestive organs the lips are drawn down, and the cries are long, loud, passionate, and attended with a profuse flow of tears; if it is in or about the lungs the nostrils are drawn up and are in quick motion, and the cries are tearless and low, except after taking a deep breath, or after coughing, when they are raised in pitch, but in a moment they are stifled, on account of the pain excited; and if it is about the brain the brows are contracted and the cries are of the character of shrieks, with periods of moaning, or of dosing.

THE SICK-ROOM.

When a child is attacked with a serious disease, the first thing to do is to choose a room in which to keep him; for it is exceedingly important that the state of the air should be regulated suitably, and otherwise it is impossible to pursue any systematic plan of nursing. If the illness is contagious the child should be placed as described elsewhere; but if it be non-contagious he may be kept in any airy, clear, comfortable, convenient room where quiet can be maintained. In it have all the articles required to meet the wants of the patient, where they can be readily found when needed; and above all, let it be kept clean and well ventilated. Let there be a thermometer by which to regulate the temperature of the air.

MENTAL CARE IN SICKNESS.

If a child be seriously sick, it is wrong to allow him to be disturbed by either the members of the family or others, and noises of all kinds should not be tolerated. When the nurse, or any one else, has to go into the room in which he is, let her go gently, but not stealthily; for every one, however young, likes to be treated in an open manner.

It is improper to despair of the recovery of a patient, no matter how young he may be, in his presence, for one must be in a very passive state who is not alarmed and depressed by discouraging words. If nothing pleasant and cheering can be sincerely said, it is best to keep silent entirely. As whispering will arouse a suspicion that something is wrong, it should not be allowed in the sick-room of any one, but more especially of a sensitive child; hence, let all that must be said be said in a clear but gentle tone of voice.

The nurse should always be at hand, so that the patient may not have to fret and get into a state of excitement before he receives the attention craved.

It is wise not to interfere unnecessarily with the doings of

a sick child, for opposition is very certain to irritate and distract his mind. If his wishes cannot be complied with let him be told so in a straight-forward, positive manner, and divert his attention to something interesting. He should not be forced to lie in a particular posture, or to move against his will, unless there is some weighty reason for so doing.

Great anxiety to please a sick child is apt to soon make him very hard to please. The following remarks from the article of Dr. Mitchell, referred to above, are to the point:—"To yield in everything to a chronic invalid is in a manner easy; and this is folk's fashion in dealing with children; but the final result is good neither for child nor for sick person, and by enabling the latter to cultivate the resistible sources of annoyance and morbid emotions is certain to result in enlarging for him by degrees the boundaries of misery. A little timely firmness from kind but steady-minded friends will do much to limit this cause of unhappiness to patient and attendants. I am tempted to add a few words as to the greater necessity of not spoiling children because of sickness. 'In acute illness it may be well very often to let them have their 'own way,' as the saying is, but as regards young people sick with chronic maladies for years, and perhaps likely to be ill or crippled for life, there can be no more fatal mistake. They, of all people, need to possess, and to have aid in forming, strong, self-sustaining characters; they, if any, are to be taught self-denial and restraint, unless we are willing to make them alike unhappy and the cause of unhappiness."

I may remark that when the period of CONVALESCENCE has arrived great difficulty is often experienced in keeping children from leaving their rooms and exposing themselves to the risk of a relapse, or of contracting some inflammatory or other trouble, which may prove disastrous. Games and every means of amusement should be provided, and everything possible be done, to prevent the restraint from becoming dis-

tasteful. This is frequently a duty of far greater importance than people in general can realize, and hence it is one in which many are likely to be remiss.

ON GIVING MEDICINE AND FOOD.

The medicine and food which it is proper that a child should have can usually be given without much difficulty if the right method is followed. Firmness of purpose is all important here. If the patient be old enough to understand, let him be impressed from the first that all that is being done is for his good. Do not deceive him, for deception cannot be practiced long on many. If the medicine is bitter do not say that it is not. Should any questions be asked about it let them be answered truthfully, or not at all. The very common custom of threatening some sort of punishment from the Doctor, if it be not taken, or any request is not complied with, is improper, both because it tends to inspire a dislike for one whose intentions are rarely otherwise than good, and whose feelings are generally friendly, and because a patient's condition cannot be well determined if the presence of the examiner is dreaded.

Neither medicine nor food should be placed in a sick-room where it can be seen by the patient, and both should always be made as attractive to the eye as possible. It is easy to serve up the most palatable dish in such unseemly shape that a distaste for it is aroused before it is touched. More than one bottle of medicine should not be exhibited at once, and it should not be formidable in size. The whole dose should be poured into the spoon, or glass, at once, and the latter should not be any larger than necessary. The sight of many bulky articles of diet is similar in effect to that of many large bottles of medicine; both start feelings of disgust. In sickness all unpleasant imaginings should be guarded against with extreme care.

ON OBSERVING THE FEATURES OF DISEASE.

In nursing a patient suffering from any severe illness, his condition should be carefully noted from hour to hour, and from day to day, so that the Doctor may be informed of it when he comes; for this will enable him to treat the case more intelligently and successfully than if he has to be guided wholly by his own intermittent observations. The things which are to be specially noticed depend much on the disease present, the stage of disease, the treatment, and other circumstances.

In at least very dangerous cases it is wise for the nurse to make a record of her observations on paper. On this point Dr. West says, "The practice of noting down the occurrences from time to time, in every case of serious illness, is of great service. I am accustomed to desire a record to be kept on a sheet of paper divided into five columns; one for food, another for medicine, a third for sleep, a fourth for evacuations, and a fifth for any special point which the nature of the illness renders of importance; and feel that by so doing I not only obtain a more accurate report than I should otherwise be likely to receive, but that also at the same time I train the nurse to habits of closer and more accurate observation."

BODILY TEMPERATURE IN DISEASE.

Of late, great importance has been attached to the observation of the bodily heat at stated intervals during the progress of serious diseases. For the temperature is a very correct index of the gravity of fevers, inflammations, and other diseases at each of their stages. As pointed out elsewhere, it depends on chemical changes in the system. When it falls much below or rises much above ninety-eight and four-tenths degrees, which is the *norme* or normal degree, it indicates that the patient is very ill. Temporary variations of a degree,

or so, are not inconsistent with health, especially in children. It is naturally a fraction of a degree higher in the afternoon than in the morning, and it is about a degree higher than the *norme* in children.

In shock, collapse, and after the loss of much blood the temperature falls, and in fevers and inflammatory diseases it rises. An increase of from one to two degrees indicates that fever is present.

It is impossible to take the temperature with sufficient accuracy with the hand ; for, as will be pointed out in another chapter, it is an unreliable guide. A *clinical thermometer* should be used. One can be obtained for from two to three dollars. This instrument may be placed in the axilla or armpit, or under the tongue, and should be retained in position for about five minutes. The ability to use it is very easily acquired. Dr. Seguin, a distinguished physician of New York city, has advocated the use of it by every mother. Says he, "Make her love, study, and trust the little magician, who, like the little finger in the fairy tale, tells things that nobody can know otherwise. With it she will give us a trusty account of the condition of her patient. During our absence her hand will be our hand, her eye our eye; and more, seeing a sudden rise or fall of temperature when we are away, she foresees the peril that thermometry predicts several hours in advance, as the barometer does the storm; her mind becomes our mind; she hastens our return, giving us a chance to ward off a deadly exacerbation, or collapse; truly herself saving the life of the patient and eventually our own reputation." I may add that the Doctor advocates the use of it to determine the vital condition of school-children, and others, from day to day, so that the food, and the bodily and mental exercise, and conditions generally, may be duly regulated. Such a use of it would require great intelligence on the part of the observer.

CHAPTER V.

THE DIET OF THE SICK.

Preliminary Remarks—The Use of Food in Sickness—Abstinence in Sickness—Over-Feeding in Sickness—The Character of Food for the Sick—Dietetic Preparations for the Sick.

PRELIMINARY REMARKS.

The dieting of the sick is a matter to which comparatively few attach sufficient importance, and it is not generally attended to either very intelligently or very carefully. In early times there was a sect of physicians who depended entirely on dietetics in the treatment of disease; they did not use medicines at all. Now, I do not advise any one to become a devotee of such a system; for there are other things than food of value to the sick. The diet, however, should be regarded as worthy of quite as much concern as purely medicinal agents in most cases. It receives great attention from all scientific physicians, experience having demonstrated to the intelligent that if it be not duly regulated medicines are seldom of great consequence.

THE USE OF FOOD IN SICKNESS.

A special system of dieting is required for nearly every serious disease; but there is little ground for the prevalent idea that this, or that article is good or bad for this, or that disease. In sickness, as in health, food is used mainly to nourish the body, and not to antidote any evil which may be present in it. In every case the kind and amount given should depend on the condition of the system which is likely to be most favorable to the disease throughout its

course. This being so, it follows that the constitution of the patient and the stage of the disease must be considered. A fever, or an inflammatory disease in its first stage is aggravated by giving food; because it serves as fuel to the existing flame. But in both fevers and inflammatory diseases food is sometimes given freely from the start, not to benefit the patient at the time, but in the hope that it will keep up his strength so as to enable him to resist the disease to the end.

Not infrequently it is unwise to give food to a patient, because of the stomach being in a disordered condition and consequently in an unfit state to perform its function. Giving it when it cannot be digested is harmful; it will weaken, not strengthen the system. In any sickness, or while feeble, a little often repeated, is the rule; but it is well not to give it so often that the stomach can get no rest.

ABSTINENCE IN SICKNESS.

The benefit derivable from abstaining largely from food should be well known to every nurse. In many cases it is the best of remedies, and the only one which is required to effect a cure, pleasantly and quickly.

It may be laid down as a rule that in all diseases of short duration, the less food the patient receives the better is his chance of recovery, and the sooner will it occur. This is particularly true of all diseases in which the digestive organs are in a deranged condition. A slight disturbance about the stomach may cause extreme feebleness in a few hours; but feebleness thus produced cannot be removed by food. This kind of weakness is not in the nature of debility; it is simply nervous prostration, and it disappears as soon as the cause which produced it subsides. These are facts which every one should commit to memory; for ignorance of them is a source of injury to many patients. Most people seem to think that weakness always calls for the use of nourishment.

OVER-FEEDING IN SICKNESS.

Too much eating proves ruinous to many a sick child. It is nearly always an injurious kindness which calls on him to eat what he does not wish. Indeed, it is seldom wise to force him to make use of anything against his will. When food will do good there is generally a strong enough desire for it.

In convalescence there is usually an excellent appetite, and food then does good, but it is easy to give it in excess. Through the thousand and one favorite delicacies which people are apt to present to children recovering from serious diseases, much harm is often done; they would generally get well faster without them and run less risk of relapses and of the contraction of other diseases while in their feeble state. As Armstrong says—

“While the vital fire
Burns feebly, heap not the green fuel on;
But prudently foment the wandering spark
With what the soonest feels its kindred touch.
Be frugal e'en of that; a little give
At first; that kindled, add a little more;
Till by deliberate nourishing, the flame,
Revived, with all its wonted vigor glows.”

THE CHARACTER OF FOOD FOR THE SICK.

The food for the sick should be nutritious, easily digested, and for the most part liquid. If it be nutritious a small amount of it will suffice. This is often desirable, for bulky food is apt to be oppressive to the stomach, and somewhat hard to digest. It is proper that it should be more or less liquid in character, because in this shape it is speedily absorbed and assimilated.

It is generally a grave mistake to have the food of the sick consist of a great variety of articles. A few which are suitable should be chosen and adhered to, unless a dislike for them arises, when others may be selected. Mixing a multi-

tude of things, sweet and sour, digestible and indigestible, is bad enough for any one in health, but it is far worse while in a sickly state.

The temperature of the food for the sick should, as a rule, be about that of the blood; but in fevers it may be given colder if it is so desired. To a patient that is debilitated it should be rather warm than cold, so that the digestion of it may begin without first abstracting some heat from the system.

In preparing food for the sick it should not be highly seasoned, especially if the illness is in its active stage. As pepper and other condiments are stimulants they are allowable, in a measure, when the patient is suffering from debility; and as salt is cooling and excites thirst, a fair amount of it may be used for the purpose of getting nourishing liquids consumed.

I will append some information in regard to each of a number of alimentary preparations which are often useful in the sick-room.

DIETETIC PREPARATIONS FOR THE SICK.

ARROWROOT. Into a pint of water at the boiling-point stir a tablespoonful, or more, of arrowroot which has been previously well moistened, and let it boil a few minutes. Sweeten with white sugar and flavor with lemon- or orange-peel. Milk may be used in place of water, and either brandy or wine may be added.

This preparation is easy of digestion. When made with milk it is blander and more nourishing than if made with water, and the addition to it of either brandy or wine renders it stimulating.

BARLEY-WATER. Add two ounces of pearl-barley which has been well soaked in cold water to two quarts of boiling water. When boiled until there is but a quart of liquid let the latter be strained off. Sugar and lemon-juice may be added.

This long-popular preparation contains scarcely any nourishment, but it is an agreeable drink. The addition of lemon-juice to it makes it cooling.

BEEF-ESSENCE. Let a pound of good lean meat be cut into small pieces and be put into a bottle. Then cork the bottle and place it in a pan containing cold water. After boiling the water gently for about two hours, the essence is ready to be poured off.

This is a highly nutritious and easily digested preparation.

BEEF-TEA. Take a pound of good meat, from which the fat has been removed, and when cut into small pieces let it be placed in a pint of cold water. Boil gently for about half an hour, and having removed the oil-drops, pour off the liquid and salt to taste. If strained at all, it should be through a coarse sieve.

This article, when properly prepared, is very agreeable to the palate, and is relished by most patients. The nutritive value of it is great, but it is less than is commonly supposed.

BREAD-SOUP. Take a large slice of good stale bread, and having broken it into small pieces, put it and some butter into a pint of boiling water. Then boil for a few minutes. Salt to suit. Celery may be added.

. This is a nutritious and easily digested preparation.

CHICKEN-BROTH. Let half of a cleaned chicken from which the skin has been removed be cut in pieces and placed in a quart of cold water. To this add a tablespoonful of rice, or a crust of bread and some salt, and then boil gently for about two hours. Put a little parsley in it. Skim it well. If strained, let it be through a coarse sieve.

This is an agreeable and moderately nutritious preparation.

CHOCOLATE. Into a pint of boiling milk stir a tablespoonful, or so, of finely scraped chocolate, and let it simmer for a minute, or two. The milk may be slightly diluted with water. Sweeten to the desired degree.

This preparation is nutritious and moderately stimulating. It is far more suitable than either tea or coffee, as a beverage, for most invalids.

CORN-STARCH. Moisten a tablespoonful, or so, of corn-starch with water, and pour it into half a pint of boiling milk. Boil a few minutes and add a little salt. Flavor with any agreeable agent and sweeten to suit the taste. Then set it aside to cool. An egg may be added.

This is a very bland preparation, and the addition of an egg to it renders it very nutritious.

CURRANT-JELLY. To a given amount of the juice of ripe currants add an equal weight of white sugar, and boil gently until the mixture will solidify sufficiently when cold—a point which is easily determined by letting a drop fall on a cold plate. Remove the scum and cast it into suitable forms.

A tablespoonful of this preparation mixed thoroughly with half a pint of cold water makes a pleasant cooling drink.

EGG AND WINE. Beat a raw fresh egg and add to it two tablespoonfuls of water and a little sugar. Mix with this a wineglassful of sherry, and let it be used soon. Instead of the wine a tablespoonful of brandy may be used.

This is a useful preparation in cases of prostration, when nourishment as well as stimulation is required.

FLAXSEED-TEA. Take of flaxseed an ounce, white sugar an ounce, liquorice half an ounce, and lemon juice four tablespoonfuls, and add to them a quart of boiling water. After standing in a hot place for four hours the liquor should be strained off.

This is a very bland drink. For ordinary coughs and colds there is scarcely any remedy more useful.

GRUEL. Moisten a tablespoonful of oatmeal and stir it into a pint of boiling water. Then boil from ten to fifteen minutes. Add a little salt. It may be used either with or without milk and sugar.

This agreeable preparation is nourishing and easy of digestion. It is often of great service.

MILK AND LIME WATER. Mix a wineglassful of fresh milk with an equal amount of lime water.

A spoonful of this mixture will at times remain on the stomach when hardly anything else will.

MILK-PUNCH. Put from one to two tablespoonfuls of brandy in a tumblerful of milk, and sweeten to the desired degree. A little nutmeg may be added.

In depressed conditions of the system this preparation is very serviceable.

MUTTON-BROTH. Take a pound of good lean mutton, and having cut it in pieces, put it in a quart and a half of cold water. Then boil gently for about one and a half hours, adding in the meantime the desired amount of salt. Some barley, or rice, and perhaps an onion may be added. Pour the liquid into a suitable vessel, and when it is cold skim off the fat. It may be warmed as wanted.

This preparation is moderately nutritious, and it is acceptable to most patients.

RICE-WATER. Boil two ounces of rice in two quarts of water for an hour and a half, and add either sugar or salt as desired. A little grated nutmeg may be put in it.

This makes an agreeable drink, but it contains very little nourishment. It is somewhat constipating, and hence it is held to be beneficial in diarrhœal affections.

SAGO. Put two tablespoonfuls of sago, with the juice and rind of half a lemon, in a pint of water, and boil gently until of the desired degree of consistency. Sugar may be added, and so may water, or wine.

This preparation is palatable and easily digested.

STEWED-OYSTERS. Take half a pint of freshly shelled, good oysters, half an ounce of butter, a third of a pint of cream, and a little flour, with some salt and, perhaps, pepper.

Scald the oysters in their own liquor, and having taken them out, strain the latter. Place the butter in a suitable stewing vessel, dust in sufficient flour to dry it up, and add the oyster-liquor. Bring this to the boiling-point, and having put in the oysters, the cream, and the seasoning, simmer for about two minutes. Serve on a hot plate.

This is a nutritious as well as a palatable dish.

TAPIOCA. Soak two tablespoonfuls of tapioca in a cup of cold water for two hours, or longer. Then put it in a pint of boiling water, and boil it for an hour, or until it becomes jelly-like. Sugar and nutmeg may be added, and so may lemon-juice, or wine.

This preparation is similar to sago in most respects.

TOAST-WATER. On a slice of good stale bread, which has been well toasted, but not burned, pour a pint of boiling water. When it has cooled, let the liquid be strained.

This is an agreeable drink, but it contains extremely little nourishment.

WINE-WHEY. To a pint of boiling milk add enough sherry wine to produce a curd. Strain off the liquor and sweeten it to the desired degree. Any flavor may be added.

This palatable drink is somewhat nutritious and stimulating.

CHAPTER VI.

REMEDIES IN SICKNESS.

Preliminary Remarks—The Use of Medicine in Sickness—Circumstances, and the Action of Medicines—The Medicine-Chest—Remedies Referred to in this Work—Weights and Measures.

PRELIMINARY REMARKS.

I am far from being of the opinion that no medicine of any kind should ever be administered save by a physician; on the contrary, I believe that there are many agents which a mother, or any one of an average degree of intelligence, may often prescribe advantageously. I hold that a person who has charge of children and who does not possess a knowledge of the properties and uses of certain medicinal substances is unqualified for the position. I agree with Dr. Bull in the statement that if "it be granted that a young mother is not to send for the physician for every trifling ailment of her little ones—and surely no one would insist on this—then it is also very plain that there is a certain amount of information, in the way of caution as well as instruction, about medicine and remedies of which she ought not to be ignorant." A doctor of medicine is not always at hand; and as in nearly every illness, whether grave or not, much, if not all possible benefit, may be derived from the use of various simple remedies, I commend mothers to gain an acquaintance with a number of them.

It may, however, be accepted as a wise maxim that no medicine should ever be prescribed unless there is strong reason to believe that it will do good. It should be resorted to only when there is unmistakably a need for it. Many

nurses, and mothers too, yes, and physicians, are prone to administer medicines for all sorts of trivial and imaginary illnesses. This unreasonable dosing is not infrequently a source of disease. Loeke was not far from being right in saying that not upon the occurrence of "every little indisposition is physie to be given, or the physician called to children, especially if he be a busy man that will presently fill their windows with gallipots and their stomachs with drugs. It is safer to leave them wholly to Nature, than to put them into the hands of one forward to tamper, or that thinks children are to be cured in ordinary diseases by anything but diet, or by a method very little distant from it; it seeming suitable both to my reason and experience that the tender constitutions of children should have as little done to them as possible, and as the absolute necessity of the case requires." In this connection I may remark that the extremely erroneous idea that a physician's visit is of little, or no account unless he writes a prescription—an idea which is entertained by many—is often the cause of unnecessary drugging. People should know that it is his advice and not a prescription only which should be prized and paid for.

THE USE OF MEDICINE IN SICKNESS.

There are, doubtless, many who believe that there is a particular medicine or "cure" for each disease; but this notion is almost groundless. To be sure, there may be a medicine which is far more suitable than any other for a particular disease; but it is not because it possesses any property capable of destroying it; its curative power is due to its effects on the whole, or a part of the system.

The object of giving medicine is to bring about such changes in the functions of the body as are calculated to favor the disappearance of the abnormal condition present. If diseases were material things, of course, it would be possible

to aim remedies directly at them; but they are not. From these statements it is evident that each case, and also each stage of each case of every disease should be treated somewhat differently. The true physician prescribes far more for conditions than diseases.

I have said that the true physician prescribes far more for conditions than diseases. From this it follows that it is entirely wrong, that it is absolute foolishness, to attempt to treat any disease with this, or that receipt. Receipt-practice is simply quackery. No receipt can be equally suitable for different cases of the same disease. But it is in treating symptoms, such as cough and convulsions, which may depend on extremely different conditions of the system, that the receipt-plan is to be especially condemned, for it may do great harm.

CIRCUMSTANCES, AND THE ACTION OF MEDICINES.

In the administration of medicines it must be remembered that their action is greatly modified by the age, sex, temperament, and general condition of the patient. On each of these points I will make a few remarks.

The young are very susceptible to the influence of most medicines, but particularly of laudanum and other narcotics. There is a rule for the regulation of the dose according to the age, which, although not entirely trustworthy as a guide, it may be well to know; it may be expressed thus: The division of the resultant of the age, plus twelve, divided by the age, into the dose of an adult, gives the right amount for a child. Thus, if the child be six years of age the dose for him should be one-third of that for an adult; for six divided into six plus twelve, or eighteen, gives three, which divided into one, or the adult dose, gives one-third.

Females are more easily affected with medicines than males, and consequently the dose for them should be somewhat smaller.

Persons of a nervous temperament require less medicine of almost any kind to produce a given effect, than those of a less excitable nature.

The state of the patient should always be carefully considered in prescribing the dose of any medicine, for far more is required under some circumstances than others. Thus, in a depressed state of the system stimulants may be given in large doses, and in great pain unusually large doses of laudanum and other narcotics are borne.

By continuing the use of any medicine for a while it is apt to produce less and less effect, unless the dose is enlarged. Those in the habit of taking narcotics can bear amounts which would be poisonous to persons who had not used them before.

THE MEDICINE-CHEST.

I would advise every mother to provide herself with such remedies as she may likely require, so that they may be at hand when needed. A medicine-chest is really a necessary part of the outfit of every home, particularly of every one in which there are children. But it is not at all necessary that it should contain a great many articles in order to meet all ordinary indications for their use.

Nothing should be found in the domestic medicine-chest the properties of which are not accurately known. Nor should there be any mixture in it the composition of which is not plainly marked on the label. Hence, no quack medicines should be placed in it. These articles are all better agents by which to kill than cure. Some of them may do good once in a while, but only by chance. I trust no mother into whose hands this book may come is so irrational, so void of common sense, so inhumane, as to be in the habit of giving any one of them to any of her children. Let it be well understood by every one that all quack doctors and quack medicine venders are among the vilest of impostors, scoundrels who for the sake

of gain relinquish all regard for both truth and the lives of the people. Beware of the wiles of these satanic pests of society.

I may say that it is unwise to have this, that and the other herb in the medicine-chest, from which to make teas and the like, of uncertain virtues and strength, as there are enough simple articles of definite properties to be found ready for use in any respectable apothecary's store.

REMEDIES REFERRED TO IN THIS WORK.

Below will be found a few remarks on each of the remedies spoken of in this work, which I advise my readers to study with care.

ADHESIVE-PLASTER or either linen or muslin coated with resinous matter is very useful in the treatment of cuts and other wounds. It does not keep long if exposed to the air. When required for use let it be cut into strips of the desired length and width. It must be well heated before it is applied, in order to make it stick. The part to which it is applied should be wiped dry, if possible. In removing a strip of it raise both ends, so that the portion of it which rests on the wound may be the last to be detached.

ALUM is an astringent, that is, it is capable of increasing the firmness or density of tissues to which it is applied. When crushed into a fine powder water dissolves it easily. A weak solution makes a useful gargle when the parts are relaxed; and it will stop bleeding from the gums and elsewhere. A teaspoonful dose of it in a little syrup repeated every ten minutes may be used as an emetic, especially in croup.

AMMONIA (AQUA OR LIQUOR) OR **HARTSHORN** irritates the part to which it is applied. Inhaling the vapor of it stimulates the system, and hence is useful in swooning and the like. If it be applied to the skin and covered it will produce a blister quickly.

ARNICA, or rather a tincture or an alcoholic solution of

the flowers of this plant, is much used as an application for bruises and swellings. It has a sedative or quieting effect. The excessive use of it may cause a troublesome eruption.

AROMATIC SPIRITS OF AMMONIA is a pleasant stimulant. It is an alcoholic solution of ammonia and various aromatic substances. For rousing the system no better remedy can be found; and being alkaline, acidity of the stomach is relieved by it immediately. Heartburn and flatulence yield to it speedily. The dose of it for a child ten years of age is from ten to thirty drops. Let it be given in a tablespoonful, or so, of water, or milk.

BLISTERS are usually produced by means of a preparation of Spanish flies (cerate of cantharides) spread on a piece of chamois. The desired action is produced in from two to four hours. They serve to subdue congestion in internal parts of the body. They are too decided in their action to warrant their use in very young children.

BORAX (biborate of soda) is an alkaline agent, and when mixed with honey is much used as a local remedy for different sore states of the mouth.

BRANDY. See WHISKY.

BROMIDE OF POTASSIUM has a sedative effect on the system. It is much used for epilepsy and convulsions. The long use of it causes more or less of an eruption (acne). The dose of it for a child ten years of age is about five grains. It may be dissolved in mint-water.

CALOMEL, BLUE MASS and other preparations of mercury are so liable to do harm that it is unwise to use any of them.

CAMPHOR-WATER is a soothing stimulant. It is a good remedy for irritability and for diarrhoea. The dose for a child of five years is about a teaspoonful.

CARBOLIC ACID is antiseptic or has the property of preventing organic matter from undergoing change; and it is destructive to low organisms. The smell of it is unpleasant,

but not injurious, unless it is very marked. The soap which contains it is very useful in many forms of skin disease, and it is very serviceable in the sick room of a person suffering from a contagious disease.

CASTOR OIL is a mild but prompt and effective aperient. Costiveness does not follow from the use of it. The dose of it is from one to two teaspoonfuls, or more. To disguise its taste it may be given in warm milk, or mint-water. It is generally given to infants without any addition.

CATNIP, in the form of a tea, is given by many to babies as a remedy for colic. It is soothing in its effects. It should be used sparingly and not habitually.

CHALK-MIXTURE in doses of a teaspoonful, or more, is a good remedy for diarrhœa. A little paregoric may be added in severe cases. Being alkaline it allays acidity of the stomach.

CHLORAL (hydrate) is a narcotic and sedative. It speedily dulls the sensibility and relaxes the system. For cramps, or any violent pain there is no better remedy. The dose for a child ten years of age is from two to five grains, and it may be given every ten, or fifteen minutes until the desired effect is produced. It may be given in a mixture of equal parts of syrup and mint-water.

CHLORATE OF POTASH favors the action of the skin and the kidneys. From being cooling it is of service when the system is in a feverish condition. As it contains a large amount of oxygen it makes a cleansing gargle. The dose of it for a child of ten years is from five to ten grains dissolved in an ounce, or more of water. For a gargle, dissolve a teaspoonful of it in a glass of water.

CHLORIDE OF LIME destroys putrid odors and checks putrefaction. When mixed with water a considerable amount of chlorine exhales from it; and it is to this gas that its disinfectant properties are due. It is well to have a plate

containing a spoonful of it and a little water in the room of a patient suffering from any contagious disease; and it should be renewed daily.

CITRATE OF MAGNESIA, prepared in the form of an effervescing mixture, is a very pleasant and cooling cathartic. The dose of it for a child of ten years is about a wineglassful. Let it be obtained fresh at the apothecary's.

COD-LIVER OIL is useful in wasting diseases of all kinds, but it is generally so distasteful to children that it is hard to give it. It acts for the most part like any animal fat.

COLD-CREAM is a preparation of white wax and other substances. It is a mild, cooling ointment. It softens the skin and promotes the healing of chapping, fever-blisters and other sores.

COSMOLINE or petroleum ointment is an excellent remedy for many forms of skin disease and for sores generally. It is without odor and does not turn rancid.

CREASOTE is very similar in its properties to carbolic acid. A drop of it in a little milk is a good remedy for sickness at the stomach, and the application of it to a decayed tooth allays the pain which may be present quickly.

COURT-PLASTER or thin silk coated with an adhesive substance is too costly to use for any but small wounds, or sores.

EPSOM-SALTS is an active cooling cathartic. Generally speaking it is too powerful for children, and besides is so disagreeable to the taste that it is hard to administer it. The dose for an adult is half an ounce dissolved in a glass of water.

FLAXSEED makes a bland tea and it is very useful as a poultice. For the latter purpose the meal of it is used. Mix it thoroughly with boiling water. Place it on linen, or any other material. A piece of flannel or of oiled silk laid over it will prevent it from drying fast. To make it more drawing a little mustard may be added to it.

GLYCERINE being a bland and slow-drying agent is a useful application for the skin when it is desired to soften it, or to allay irritation.

HOPS make a soothing poultice. A pillow of them is quieting.

HOT-BATHS are useful when one wishes to soothe and relax the system. When used for convulsions the water should be as warm as it can be borne. Bathing the feet in hot water allays congestion about the head and lungs. Mustard may be added to it.

ICED-WATER may be applied to any part of the body to bring down the temperature and allay congestion.

INJECTION (an) or an enema is sometimes preferable to medicine as a means of unloading the bowels. If resorted to frequently it irritates and weakens the parts. The simplest form of it is warm water; but either barley-water, or thin gruel, or milk, is preferable, being blander. Castor-oil may be added, and so may soap. For an infant an ounce of fluid is enough; for a child of five, about four, and for one of ten, about half a pint. In administering an injection, place the child on his side, with his knees drawn up toward the body. After greasing the nozzle of the syringe, let it be gently introduced into the bowel from one to two inches. The fluid should be forced in very gradually; for if it is not it will likely be at once rejected. After withdrawing the instrument, stillness should be maintained until the desired action is produced. Concentrated nourishment, such as beef-tea, may be administered in this way, and so may medicines.

INUNCTION or rubbing the skin with lard or some other oily substance is a remedy of great value for catarrhs, and it may be practiced in scarlet fever and measles, both to allay irritation and to prevent the spread of contagion.

LAUDANUM or the tincture of opium at first stimulates and afterward depresses the system. If the dose is large the

period of stimulation is short. A moderate amount of it soon produces sleep, and a large amount of it will cause death. Children are very easily affected by it. A few drops of it will kill an infant. A full dose for an adult is twenty-five drops, and for a child of ten years about five. It would be well for mothers never to give children any of this agent. The habitual use of it is ruinous to them.

LEAD-WATER (dilute solution of subacetate of lead) is a mildly astringent and sedative water. A mixture of equal parts of it and of laudanum is an admirable lotion for sprains and bruises.

• LEMONADE or a drink made from the juice of the lemon is an excellent remedy for fever and catarrhs. There are few things so often of service.

LIME-WATER or water in which unslaked lime has been dissolved is much used as an antacid. It is an efficient remedy for acidity of the stomach, heartburn, and often for vomiting and diarrhœa. A mixture of equal parts of it and of olive oil is an admirable application for burns and scalds.

MAGNESIA is a white powder. It acts as a gentle laxative, and at the same time allays acidity and irritability of the stomach and bowels. The dose for an infant is about five grains; and for a child of ten years from ten to twenty. It may be given in milk.

MALT-EXTRACT is a nutritive tonic, and may often be used to advantage in the wasting diseases of children. Let it be taken after eating. The principle called diastase, which is present in it, promotes the digestion of starchy articles of food; it, in a measure, takes the place of the saliva and the pancreatic fluid.

MANNA is a sweet powder. It is a mild aperient in a dose of from one to three drachms, and may be given in warm milk. For persons over two years of age it is scarcely powerful enough. A mixture of it and senna has long been popular.

MINT-WATER consists of the oil of peppermint and distilled water. It is a mild aromatic stimulant. The dose of it for a child is a teaspoonful, or more.

MUSTARD is of great value, both as an emetic and as an external application. To produce vomiting let a teaspoonful of it mixed in a little warm water be given and repeated every five minutes, until the desired effect is produced. As an external application, a counter-irritant, it may be rubbed into the skin with lard, or any oil, or may be made into a plaster. In making the latter use moderately warm water, and mix thoroughly. For young children some flour may be added. It may be applied directly to the skin, or a thin fabric may intervene, and need not generally remain on longer than twenty minutes. It should be removed as soon as the part is well reddened. Through it severe inflammation of the skin may be produced.

NITRIC ACID is a powerful caustic. By means of it warts and other growths of the skin can be removed speedily.

PAREGORIC (camphorated tincture of opium) contains opium, camphor, oil of anise and other agents. In a tablespoonful of it there is a grain of opium, or the equivalent of twenty-five drops of laudanum. In moderate doses it gently stimulates, and at the same time allays irritability of the system, and induces sleep. The dose for an infant is about five drops, and for a child of ten years about half a teaspoonful. The habitual use of it is very injurious.

PEPPER, either black or red, makes a powerful counter-irritant. It may be mixed with water, or whisky, and spread on flannel. The skin is not likely to be broken by it as with mustard.

RICE-FLOUR is a good drying powder, and allays irritation of the skin.

SEA-BATHING is invigorating to persons in health; but those in a debilitated state should not resort to it rashly. The

shock to the system is marked. It is wrong to remain motionless in the water. If reaction does not follow quickly on coming out of the water it is an indication that the body has been chilled to an excessive degree. No one should remain in it more than ten minutes. The temperature of it along the coast of New Jersey in summer is from seventy to eighty degrees. Children are apt to be afraid of the waves. Forcing them to bathe against their will is both cruel and dangerous. The salt water may be used without going into the sea. No salt is absorbed, but perhaps some adheres to the skin and stimulates. The sea air, being pure and invigorating, is often beneficial to delicate children.

SEIDLITZ POWDERS make an agreeable cathartic. Like other cathartics they act best when taken on an empty stomach.

SENNA is an active cathartic. The tea made from the leaves may be sweetened with sugar, or manna.

SODA, an agent much used for washing purposes, is an excellent remedy for burns and scalds. Let a solution of it be applied as soon as possible.

SOAP-LINIMENT OR OPODELDOC contains camphor, alcohol and oil of rosemary, besides soap. It has long been a popular remedy for sprains and bruises. The addition of half an ounce of laudanum to each half pint of it makes it still more soothing.

SOLUTION OF THE ACETATE OF AMMONIA promotes the action of the kidneys and skin, and hence, has a cooling effect on the system. It is an excellent remedy for fevers and catarrhs. The dose for a child of ten years is about a teaspoonful.

SOLUTION OF MORPHIA is very similar in its effects to laudanum, morphia being the active principle of opium. A dessertspoonful of it is equivalent to twenty-five drops of laudanum.

SPICED SYRUP OF RHUBARB is a mild stimulating laxative. Small doses of it are very serviceable for the bowel complaints of children, as they are regulative. To relieve costiveness the dose for a child a few months old is a teaspoonful.

SPIRITS OF TURPENTINE makes a stimulating liniment. A rag saturated with it, and then covered with a piece of heated flannel, is sometimes preferable to mustard as a counter-irritant. A large dose of it is an admirable remedy for intestinal worms.

SWEET SPIRITS OF NITRE increases the action of the skin and kidneys. It is more energetic but not so pleasant to the taste as the solution of the acetate of ammonia. The dose of it for a child of ten years is about half a teaspoonful. Let it be given in water, or milk.

SYRUP OF IPECACUANHA promotes the action of the skin, and is an expectorant. A large dose of it causes vomiting, and depresses the system. It is extremely valuable in catarrhs and fevers. It may be used alone, or with either the solution of the acetate of ammonia or the sweet spirits of nitre. In connection with such a mixture a little paregoric is of service, if there is much excitement of the system. The dose for a child of one year is from five to ten drops. To produce vomiting a teaspoonful may be given and repeated every five minutes, or so, till the desired effect is produced.

SYRUP OF SQUILLS acts on both the kidneys and the lungs. It is preferable to ipecac. in the advanced stage of catarrhs. The dose of it for a child of one year is from five to ten drops. A large dose will cause vomiting.

SYRUP OF THE IODIDE OF IRON is a valuable remedy for scrofulous and allied conditions of the system. It acts as a stimulant of the various functions and enriches the blood. The dose for a child of ten years is from five to ten drops in a little water. In some cases it causes headache. Like the wine of iron it blackens the fæces.

TINCTURE OF BARKS (compound tincture of cinchona) is a stimulating tonic. The use of it sharpens the appetite and invigorates the system. The dose for a child of ten years is about half a teaspoonful.

TINCTURE OR ESSENCE OF GINGER is a stimulant. It is in use in many homes as a sort of cure-all. Beyond its stimulating properties it has no special virtue. The dose of it for a child of ten years is from five to ten drops.

TINCTURE OF MYRRH mixed with a little water may be used to advantage as a mouth-wash, and also as a stimulating gargle.

VINEGAR makes a cooling wash, and the addition of salt to it makes it still more so. It may be used to advantage for sprains and bruises.

WHISKY and BRANDY are both excellent stimulants. The latter is more pleasant to the taste and is not as apt to contain deleterious impurities as the former. They are much used, not only by physicians, but popularly as remedies for disease. In the presence of temporary weakness and of debility they are of great value. Parents should be careful not to give them to their children habitually, unless there is some very special reason for so doing.

WINE being a mild and agreeable stimulant is a valuable medicine under many circumstances, but it is not well to use it, or any other agent, unless there is some real use for it.

WINE OF IPECACUANHA acts similarly to the syrup; but being more concentrated it is often preferable as an emetic. As an expectorant the dose for a child of ten years is about five drops. To produce vomiting let a teaspoonful of it be given every five minutes, or so, till the desired effect is produced.

WINE OF IRON is an admirable remedy for debility and all conditions of the system in which the blood is impoverished. The dose for a child of ten years is about a teaspoonful.

ZINC-OINTMENT is an extremely useful remedy for many skin diseases. The addition to it of some glycerine and a little carbolic acid is sometimes advantageous.

WEIGHTS AND MEASURES.

The several weights used by apothecaries and physicians are derived from the Troy pound. The relative value of each (and also the symbol or mark used to represent it) is shown by the following table:—

Twenty grains (gr.)	make a scruple (ʒ)
Three scruples	make a drachm (ʒ)
Eight drachms	make an ounce (ʒ)
Twelve ounces	make a pound (lb.)

In connection with the symbols, Roman numerals are used to indicate the amount (when even) of each denomination wished. Thus gr.ij. = two grains; and ʒvj. = six drachms. The half of an ounce, or any other weight, is indicated by placing ss. (*semisse*) after it. Thus ʒss. = half a drachm, and ʒiss. = one and a half drachm. The written words should be preferred by people in general.

The several measures used by apothecaries and physicians are derived from the wine gallon. The relative value of each (and also the symbol used to represent it) is shown by the following table:—

Sixty minims (℥)	make a fluid-drachm (f.ʒ)
Eight fluid-drachms	make a fluid-ounce (f.ʒ)
Sixteen fluid-ounces	make a pint (O)
Eight pints	make a gallon (C)

In connection with the symbols, Roman numerals are used to indicate the amount (when even) of each denomination, just as in the case of weights. Thus f.ʒij. = two fluid-drachms; and f.ʒiss. = one and a half fluid-ounces.

The supposed capacity of each of a number of domestic measures is shown by the following table:—

A teaspoon contains a fluid-drachm.

A dessertspoon contains two fluid-drachms.

A tablespoon contains half a fluid-ounce.

A wineglass contains two fluid-ounces.

Let it be borne in mind that the capacity of each of these measures, as ordinarily met with, varies greatly.

A drop is generally believed to represent a minim, but it does not, as a rule. The drops of all liquids are not of equal size. Thus a fluid-drachm of water contains only forty-five drops, while one of alcohol contains a hundred and thirty-eight.

From the remarks just made it is evident that a GRADUATED-GLASS for the administration of medicine should be found in every household; for it enables any one to give the exact dose—a matter of great importance. It costs but a trifle.

CHAPTER VII.

CONSTITUTIONAL AND ALLIED DISEASES.

Preliminary Remarks—Debility—Anæmia—Chlorosis—Marasmus—Diabetes—Scrofula—Phthisis or Consumption of the Lungs—Croup—Rickets—Caries of the Spine—Coxalgia—Dropsy—Hydrocephalus.

PRELIMINARY REMARKS.

There is an appalling prevalence of constitutional feebleness and tendency to disease of various kinds among the young everywhere. Through hereditary, or acquired taints a large percentage of people are invalids during the greater part of their lives. And when the system generally is in an unhealthy state, existence is apt to be not only unpleasant but brief. Nearly a quarter of the deaths in Philadelphia are directly attributable to constitutional taints, and of these about one-fourth are of persons under five years, and about one-third are of minors. Nor are these figures exceptionally bad; they are even better than those of some great centres of population. Such facts serve to show the crying need there is for earnest attention to matters pertaining to health.

Unfortunately, it is only too true that the constitutional vices of parents may be inherited by their children. Tuberculous consumption of the lungs is handed down from generation to generation in families, just as surely as traits of personal appearance. The stains of physical sins are transmittible to one's descendants, and are inclined to grow more and more marked until the line dwindles and dies out utterly through degeneracy. There may not be an actual inheritance of any special disease, but there is often a very marked ten-

dency to it. Although the child of consumptive parents may not be born with diseased lungs, yet, on account of peculiarities of his system, time will likely bring about mortal changes in their structure. The diseases which are usually said to be acquired by descent are really manifestations of defects in the organization. Such defects may be of all grades. Hence, in some persons the tendency to a particular disease is very slight, while in others it is very pronounced. And it is for the most part progressive; it is usually less marked in the parent than in the child. Indeed, a long continued perversion of function will very probably have an influence on the development of the offspring. It is in this way that morbid constitutional conditions of a structural kind originate. A mere casual functional disturbance may be in the grandchildren a serious defect in the organization, a strong tendency to a particular disease, or a number of diseases. For the sake of their children, then, people have a powerful incentive to keep themselves as healthy as possible.

Acquired taints of the system generally are quite as common as those that are inherited. In rearing children it is easy to unwittingly encourage the growth of a proclivity to any of the manifold forms of degenerative disease. Breathing impure air is very productive of morbid changes in the system. On this point the late Sir James Clark, a distinguished English physician, says: "If an infant born in perfect health, and of the healthiest parents, be kept in close rooms in which free ventilation and cleanliness are neglected, a few months will often suffice to induce tuberculous cachexia. * * *

There can be no doubt that the habitual respiration of the air of ill-ventilated and gloomy alleys in large towns, is a powerful means of augmenting the hereditary disposition to scrofula, and even of inducing such a disposition *de novo*. Children reared in the Workhouses of this country and in similar establishments abroad almost all become scrofulous,

and this more, I believe, from the confined impure air in which they live and the want of exercise, than from defective nourishment." On the surroundings and the manner in which a child is brought up depends very largely his whole condition physically and otherwise.

Now, from the remarks which precede, it may be gathered that I believe that it is possible to, in a great measure, prevent diseases to which there is a constitutional tendency, as well as those which spring from errors in the mode of life. A child need not necessarily die from tuberculous consumption of the lungs because his father did. By hygienic living and systematic training, sickness may be prevented from arising, and if present may be eradicated, at least largely, from the constitution of every one.

DEBILITY.

A run-down condition of the system, in absence of any disease, constitutes debility. It is seen in children that do not receive sufficient nourishment, or that are brought up in such a way that their digestive powers are limited, or that are convalescing from serious, protracted diseases. Cases of it are very common. Thinness and feebleness are the essential features of it.

To remove this condition plenty of nourishing food and a good appetite are required. Many an infant is kept in a debilitated state through being given too scanty a supply of milk by its feeble mother. A mother should try to adopt such a regimen as will serve to enable her to have an abundance of milk, and if unsuccessful she should furnish her child something which will take the place of it. It is better to bring a child up on cow's milk and other food than on the nourishment furnished by its mother, if she cannot yield enough, or if what she does yield is of poor quality. In any case, cow's milk, preparations of oaten and other meals, and starches, baby-

foods, soups, beef-tea, eggs, and the like, should be given to children at an early age if needful, rather than that they should be allowed to be injured by starvation. When an appetite is wanting, exercise in the open air, baths once, or twice a day in moderately cold water, systematic rubbing, and kneading and moving of the various parts of the body, two, or three times a day, will usually produce it soon. Medicine should not be resorted to rashly. For children of any age the best for the purpose is either wine of iron or tincture of barks three times a day. Either may be continued for a week, or longer.

ANÆMIA.

Anæmia is commonly spoken of as "poverty of the blood," and in children it is usually due to living on food which is defective in quality, or to breathing impure air, or to confinement in badly lighted apartments, if not to some wasting disease.

The *symptoms* of this disease are pallor, languor, weakness, nervousness and palpitation of the heart. The veins beneath the skin are plainly visible, and the lips are almost without color, in marked cases of it.

To remove this affection, pure air, sunshine, exercise and good food are essential, and the wine of iron is very serviceable. In connection with these measures, all those which are promotive of health and strength are of advantage.

CHLOROSIS.

Chlorosis is commonly called the GREEN-SICKNESS, and it is a species of anæmia. It occurs in girls in their teens. Marked cases of it are not extremely numerous. Sometimes it lasts for years. Few deaths are attributable to it.

A waxy, yellowish-green paleness of the face is the most noticeable of the *symptoms* of this disease. There is usually little color in the lips, and often there are dark lines beneath

the eyes. Nervousness, palpitation of the heart, weakness, melancholy, ringing in the ears, broken sleep, impaired digestion, a desire to eat slate pencils, earth and the like, and neuralgic pains about the abdomen and elsewhere are features of all pronounced cases.

All the *remedies* recommended for anæmia are equally suitable for this disease. The wine of iron is highly beneficial. An occasional dose of magnesia is also serviceable. Cheerful company is very necessary in some cases, and change of scene generally does much good.

MARASMUS.

The literal meaning of the word marasmus is emaciation, and it is applied by many to any disease of early life of which the leading feature is a slow decline or wasting. If the system runs down without any particular lesion or structural change in any part, the condition is properly called ATROPHY; if in connection with progressive emaciation there is evidently a scrofulous degeneration in the glands of the mesentery (the membrane which binds the folds of the bowels together), the glands through which the nutrient matter on its way to support the system passes and is elaborated, it is called TABES MESENTERICA; and if the lungs are affected in connection with emaciation and either with or without degeneration of the glands of the mesentery, it is called CONSUMPTION. About seven hundred deaths (one twenty-seventh of the total mortality) are imputed to it every year in Philadelphia, nearly all of which are of children under two years of age.

The *cause* of marasmus in any case may be obscure; but it may usually be attributed to a hereditary taint, or bad air, or a bad diet, or bad usage generally.

The *symptoms* of this disease vary according to its nature. It mostly comes on by slow degrees. Day after day the little sufferer becomes thinner and thinner, until there is little more

than skin and bones left, and a ghastly aged appearance is produced. There is languor from the start, but it becomes more marked toward the end. The appetite is sometimes voracious and the bowels are irregular. If the mesenteric glands are affected there is feverishness, and the abdomen is tender and apt to be swollen greatly on account of the abundance of gases that are produced; and if the lungs are affected there is a cough, with marked feverishness, especially at night.

Whether this disease is due to a hereditary taint or not, attention to the diet and mode of life generally is the chief part of the *treatment* which it demands. If taken early it is possible to ward it off, in many cases, in this way. Medicines are not of much value in any case, save to regulate the bowels, relieve colic, or cough, and so on. Syrup of the iodide of iron is worthy of most confidence if there is a serofulous taint in the system. When degeneration of the mesenteric glands, or of the lungs has once set in, there is no ground on which to place a hope for recovery; death will occur inevitably at a not very distant day.

DIABETES.

The leading features of diabetes are excessive thirst and urination; and there are two forms of it; in one, DIABETES INSIPIDUS, the water is free from anything unusual, and in the other, DIABETES MELLITUS, it contains sugar (glucose). The latter is by far the more serious, but both are apt to prove fatal sooner or later. Almost twice as many males as females are affected; and it occurs more among adults than minors. About a score of deaths are caused by it yearly in Philadelphia.

The *cause* of either form of this disease is seldom apparent; but it is probably always dependent on a morbid condition of the constitution, particularly of the nervous system. It is

now believed that the liver is the seat of the sugary form, that this organ does not, as in health, completely transform the sugar which is absorbed and enters the circulation, into such material as will, through other nutritive changes progressing within the system, yield heat and force in general.

The *symptoms* of both forms of this disease arise gradually. Either, however, may start suddenly. Still, as a rule, the sugary form comes on by degrees. At first the amount of sugar is small, but later it may be so abundant as to make the water far heavier than it is in health. The proportion of it usually present is from eight to twelve per cent. The specific gravity of the water will be found to be much above ten hundred and seventeen (seventeen-thousandths more dense than rain-water), which is about its normal weight; in many cases it runs up even beyond ten hundred and sixty. The thirst increases in proportion as the amount of urine does. In marked cases gallons of water may be consumed daily. The appetite is nearly always only too good; but emaciation progresses. The skin grows dry and harsh, and the temperature of the body is inclined to be low. Consumption of the lungs sets in sooner or later, in many cases.

The *treatment* of either form of this disease is not satisfactory in the great majority of cases. Beyond living in a strictly hygienic manner, nothing scarcely can be done. In the sugary form it is well to restrict the food as much as possible to articles containing little starch, or sugar; but it is wrong to do it at the expense of great self-denial on the part of the patient. I believe the best plan to pursue in any case is to change the scene and mode of life, and in connection with a diet as free as possible of starch and sugar, to liberally exercise the body and amuse the mind. As for medicine it is rarely, if ever, of any value, except to tone up the system and to meet incidental evils. Too much of it is generally used.

SCROFULA.

Scrofula was formerly known very generally as the KING'S EVIL. It was so called because it was popularly believed that the touch of a monarch was curative of it. In the fourth Act of Shakspeare's drama, "Macbeth," the entrance of a doctor into a room in the King's palace, in which are Malcolm and Macduff, gives origin to the following remarks:—

Mal.—Comes the king forth, I pray you?

Doct.—Aye, sir; there are a crew of wretched souls
That stay his cure: their malady convinces
The great assay of art; but at his touch,
Such sanctity hath heaven given his hand,
They presently amend.

Mal.—I thank you, Doctor.

[*Exit Doctor.*]

Macd.—What's the disease he means?

Mal.— 'Tis called the Evil:

A most miraculous work in this good king;
Which often, since my here-remain in England,
I have seen him do. How he solicits heaven,
Himself best knows: but strangely-visited people,
All swoln and ulcerous, pitiful to the eye,
The mere despair of surgery, he cures;
Hanging a golden stamp about their necks,
Put on with holy prayers.

That tens of thousands of people were cured in this way is undoubtedly true. It was hope sustained by an unfaltering faith that healed them. This is a fact which all who are called upon to treat cases, not only of scrofula, but many other conditions and diseases, should carefully consider.

This affection may be induced by living on poor food and in impure air, but it is inherited for the most part. What it is, or what it is not, however, is hard to say; for it assumes many aspects. Scientific physicians do not make use of the word as the name of a particular disease; they apply it to a morbid condition of the system which favors the occurrence of degenerative action in the glands, lungs, bones and tissues

generally. Marasmus, spinal-disease, hip-joint disease, tuberculous consumption of the lungs, chronic abscesses, ulcerations, eruptions, and discharges of different kinds, are some of the manifestations of it; and persons affected with it are both very susceptible to most diseases, and very likely to succumb to them.

The *indications* of a well-marked scrofulous habit are, light hair, a pale, clear skin, a rather full face, weak eyes, thick lips, bad teeth, a tendency to enlargement of the glands about the neck and elsewhere, and a dull expression.

To *eradicate* the scrofulous taint it is necessary to have the surroundings and mode of life as thoroughly sanitary as possible. Let the various measures calculated to sustain health and invigorate the system be resorted to and persevered in. Iron and other tonic medicines may be of value; but if the food, air and habits are not attended to little good need be expected from them. No powerful drugs should be used, for they will in all probability be more harmful than beneficial. As already hinted, cheerfulness and hopefulness should be encouraged.

PHTHISIS OR CONSUMPTION OF THE LUNGS.

The term phthisis is given by some physicians only to that form of consumption of the lungs which is due to scrofulous or tuberculous degeneration; but it is applied generally to any form of disease of either one or both of these organs which involves the loss of any of their structure. I will use it in the latter sense. But I may say in this connection that the scrofulous form of it is the most common in early life, at least; in only a small minority of cases can it be referred to purely inflammatory action.

Phthisis is the most destructive of all diseases. It is a scourge which never abates. The number of its victims is shockingly great. About one-eighth of all the deaths which

occur yearly in Philadelphia are caused by it; and of these, over one forty-fifth are of persons under five years, about one twenty-fifth are of persons under fifteen, and one-eighth are of persons under twenty. In some cities the mortality from it is even more terrible. In the nation at large it is nearly one-seventh of the whole. Between ten and fifteen years of age the deaths from it are twice as numerous among females as males, and between fifteen and twenty, well on to three times as numerous.

There are manifold *causes* of this frightful disease. As already stated, it is often attributable to a hereditary taint. Everything which tends to lower the tone and vigor of the system is promotive of it. As is observed in one of a series of lectures on the disease, delivered recently by Dr. William Pepper, a distinguished physician of Philadelphia, "everybody is liable to phthisis; some more so than others. Unquestionably those are more liable to it who are born of parents of a weak constitution, especially if this has shown itself before the birth of the children by a tendency to lung trouble, or if they have begotten children with a tendency to phthisis. But it is not only an inherited predisposition that makes one more liable to phthisis than another. Any inherited delicacy of constitution, anything that makes the person more liable to be affected by depressing causes, anything, in short, that diminishes the vitality of the individual, or his hold upon life, and tends to keep up an unhealthy type of physical action, all these are predisposing causes of phthisis. It is thus that such causes as starvation, bad food, bad hygienic surroundings, long nursing, or improper food, impairing the primary assimilation during the period of development, act in a most powerful way in developing a weakness of constitution which may show itself later in a tendency to phthisis; so that a child may come into the world with this taint, or it may be developed during child-

hood by the causes I have mentioned. And there is no time in the whole period of life when the causes that operate upon us to determine our future for good, or for ill, act so powerfully as during the period of childhood. A neglected catarrh, an untreated diarrhoea, may act upon the system so as to bring about this weakness of constitution. If we grasp this idea it will lead us to infinitely greater carefulness in the hygiene and treatment of the young. The prophylaxis (preventive treatment) of phthisis you will find begins at birth, and the most important time for prophylactic treatment is during infancy."

The onset of this disease may be slow, or fast. A cough is generally the first of the *symptoms* of it to be observed; and it continues to the last. It is caused by the presence of phlegm and other matter in the lungs. In some cases hemorrhages occur early, but in many there are never any of much account. These alarming discharges are caused by injury to blood vessels, produced by the morbid action going on in the lung substance. They seldom prove fatal. Debility, pain or rather a soreness in the chest, emaciation, pallor, and the expectoration increase up to the end. As the disease advances feverishness occurs, with profuse perspiration, especially at night; and there is more or less diarrhoea and swelling of the limbs. The expectoration and sweating are comparatively slight in the very young. The appetite is rarely good; nor is there much desire for exercise.

The *treatment* of this disease is very unsatisfactory. When the substance of a part of either one or both lungs undergoes tuberculous degeneration, or is destroyed in any way to any extent, it is impossible to do more than prolong life a little while. From this statement the reader may infer that it is exceedingly important to guard against the inception of the disease. In the children of consumptive parents it may be expected to occur if extraordinary efforts are not made to clear

from the system the tendency to it. It is to be feared that few parents predisposed to it attempt to do much to render the constitutions of their offspring less favorable to the occurrence of the fatal disease.

When this disease has developed the patient requires very careful nursing. Through it life may be prolonged and rendered less miserable while it lasts. Unless the weather is very boisterous it is best to keep the patient a great deal in the open air. The room in which he stays should be airy. When heated it is well not to keep it very dry; nor should it be very warm. It should be thoroughly ventilated. A sponge-bath daily does good. The clothing should be largely of woolen material, and it should be in every way sufficient to prevent the body from being chilled. All kinds of nourishing, easily digested food should be supplied in abundance, and the appetite may be whetted with the tincture of barks, taken in small doses, three times a day. The chest may be rubbed once, or twice a day, with oil and a little mustard, or with any stimulating lotion; for it will tend to lessen the cough, by checking, to some extent, the formation of phlegm.

It is vain to hope for a cure from the use of medicine in this disease, except, perhaps, at the very start. The less reliance there is placed on it the better, because the greater will be the attention paid to hygienic means. Under the direction of a skillful physician there are agents which may serve at times to subdue troublesome symptoms. A teaspoonful of mint-water, or of camphor-water, may be used to cut short coughing spells. For hemorrhage a teaspoonful of salt and stillness are the measures called for.

I may say that it is only early in this disease that any possible change of air can be of great service. Once a considerable portion of the tissue of the lungs is destroyed, neither climatic influences nor anything else can either restore it or entirely stop the progress of the evil.

CROUP.

Croup is called *HIVES* or *HEAVES* by some and *STUFFING* by others. There are two types of this disease of the wind-pipe; the true or membranous, and the false or spasmodic. In the former there is a congestive, or an inflammatory condition present, attended with more or less of a deposit; and in the latter, instead of a tendency to inflammation and the formation of a deposit there is simply a morbid excitability of the part. Both types are very fatal and occur mostly from the second forward to the tenth year of age. They are accountable for about four hundred deaths every year in Philadelphia, over one-half of which are of persons between two and five years old.

Fair-skinned, flabby, languid children are the most apt to be affected with membranous croup; and a weak, irritable, nervous system favors the appearance of spasmodic croup. Neither can usually be traced to any special cause acting on the body from without.

The *symptoms* of both forms of this disease develop quickly and are very alarming.

If after a few hours of restlessness a child is hoarse, breathes audibly, hurriedly and with difficulty, and has a short, barking cough, the disease present may be regarded as membranous croup. The croupy noise and the difficulty in breathing become very marked as the disease advances. By the second day the cough gets loose and violent, and there is considerable fever. If the deposit or false membrane in the wind-pipe grows very extensive it destroys the voice entirely and speedily chokes the patient to death. The symptoms generally arise and are most severe in the night-time. Free expectoration from an early period in the attack is favorable.

Spasmodic croup usually comes on extremely fast. After a short period of restlessness the breathing speedily becomes so difficult as to threaten life. The voice is not much affected,

nor is there a severe cough. The symptoms do not often last long; they disappear in a few hours.

The *treatment* of both types of this disease should be prompt and decidedly active. In the management of either temporizing generally leads to a fatal issue.

When an attack of membranous croup is believed to be developing, give the patient immediately a warm bath, then a thorough rubbing about the head and neck with oil and mustard, then put him into a warm bed, and then give half a teaspoonful of wine of ipecac. every fifteen minutes until vomiting occurs. A teaspoonful of powdered alum mixed with a little syrup of any kind is regarded by some as a very desirable emetic under the circumstances. If the symptoms increase let the ipecac. be continued in moderate doses often enough to keep the child in a slightly nauseated condition. A fair dose of paregoric, or of the solution of morphia may also be given every hour. A sufficient amount of magnesia, or of castor oil to open the bowels freely will be of service. The rubbing may be repeated and a mustard plaster may be applied to the upper part of the chest in front. The vapor of slaking lime may be inhaled in bad cases, in the hope of softening any deposit which may be present. When an ensheathing membrane has formed and threatens to smother the patient, neither paregoric nor morphia, nor any quieting medicine should be given, for anything which tends to allay the cough only tends to prevent the removal of the matter, the presence of which is the great cause of danger to life. Aromatic spirits of ammonia should then be given in moderate doses, repeated every hour, or oftener; for it favors the removal of the deposit by both serving to dissolve it and exciting sufficient power to cough it up. Brandy, wine, and other stimulants are also useful. Later, beef-tea and other nourishing articles of diet should be given freely. In apparently hopeless cases opening the wind-pipe is occa-

sionally practiced; but only physicians should venture to perform this hazardous operation.

The treatment used in the early stages of the membranous form of the disease is proper for the spasmodic. Chloral may often be used here to good purpose.

After an attack of either form of croup, efforts should be made to invigorate the system of the patient; for in this way only can other attacks be prevented.

RICKETS.

A badly nourished, yielding condition of the bones is the leading feature of rickets. This disease is of a scrofulous nature, but it is not generally inherited. It is usually traceable to unwholesome and insufficient food and impure air. Hence, it is far more common among the children of the poor than those of the rich, and in cities than in the country. Cases of it are numerous. Not many deaths, however, are directly attributable to it.

Rickets makes its appearance mostly from the first to the third year of life, particularly between the twelfth and eighteenth months. The first *symptoms* of it, in marked cases, are feverishness, restlessness, derangement of the bowels, tenderness of the body in general, and a dislike to moving. Soon an enlargement of the bones about the wrist and ankles is noticeable. Later, if the weight of the body is thrown on the limbs they yield and may be strangely distorted. But the chest and other parts of the body, as well as the legs, are apt to become deformed. Many hunchbacks are persons who have been affected with this disease, and so have most of those who are "chicken-breasted."

Rickety children are for the most part defective in both body and mind. Some of them, however, are even precociously bright. They seldom learn to speak early.

To be successful, the *treatment* of this disease must be begun

as soon as the first symptoms of it begin to appear. The remedies required are such as will improve the physique generally. The nourishment should be both abundant and wholesome; and pure air and sunshine are needed. All measures promotive of health and strength are of value, and should be earnestly and persistently kept at play. Iron and other tonic medicines may be used. Cod-liver oil is sometimes very serviceable. Lime-water, or chalk-mixture will serve to check any diarrhœa which may occur.

A rickety child should not be allowed either to walk or to sit up early, lest deformities may be produced. It is better to prevent him from walking for some time than to apply braces, or supports of any kind. These appliances are useful when, for any reason, it is very difficult to keep the patient constantly off his feet.

CARIES OF THE SPINE.

Caries or degenerative inflammatory action in a portion of the spine is also called POTT'S DISEASE, because it was first carefully described by a distinguished English surgeon of that name. It occurs mostly among serofulous children. Cases of it are not rare.

At the commencement of the affection the *symptoms* are, an aching pain in the back, numbness of the lower extremities, an unsteady gait, debility and derangement of the digestive system. Later an abscess appears either at the seat of the disease, or in the region of the groin, and the spine becomes distorted. Sometimes the pressure of the gathering on the spinal cord completely paralyzes the body, from the waist down.

The *treatment* of this disease should be begun as early as possible. The spine must be kept at rest, and the part inflamed be relieved of pressure by lying still, or by means of certain mechanical appliances. All the remedies recommended below for coxalgia are of service.

COXALGIA.

Coxalgia or HIP-DISEASE is seated in the joint at the head of the thigh-bone, and is of an inflammatory nature. Between the fourth and the fourteenth year is the period of life in which it appears, as a rule. A scrofulous constitution is chiefly responsible for its occurrence; but it is commonly referred to an injury, such as a blow, or a fall. It is apt to be of long duration, and may leave the limb not only greatly shortened, but motionless at the hip. Few deaths are caused by it directly.

The *symptoms* of this disease generally develop very gradually. A slight lameness, eversion of the foot to an unnatural degree and pain about the knee, are the indications of it first noticeable. If pressure be applied over the hip-joint it will hurt; consequently the child always lies on the well side. Shortening of the limb soon begins.

Under proper *treatment* this disease can often be cured, if taken in time. A very important part of it is rest. While the weight of the body continues to bear on the joint recovery cannot be expected. By wearing certain mechanical appliances the patient can walk without pressing on the head of the thigh-bone. The repeated application of mustard, or some other irritant over the joint is beneficial. Syrup of the iodide of iron, in medium doses, three times daily, is often useful. Plenty of nourishing food, fresh air, and all measures advantageous to health and strength will do good. As in both rickets and caries of the spine, it is well to have a physician in charge of every case from the start.

DROPSY.

Dropsy or the presence of an abnormal amount of watery fluid in the tissues or in any of the cavities of the body may be regarded as only a symptom; for on examination it will always be discovered that it springs from a special disease, or

morbid condition. It may arise from any disease of the heart, or of the liver, which obstructs the circulation of the blood, or from any disease of the kidneys which checks their action, or from the impression of cold on the skin, or from anæmia and debility, or from inflammation. Rarely is the whole body affected; and when it is the cause is mostly either cold and wet, or scarlet fever. When it is present in the abdomen only the cause may be sought for in the liver, or the kidneys. This form of it is not of frequent occurrence among children.

Dropsy of the limbs, or of any part of the body is indicated by swelling; which swelling is of such a character that the indentations made by firm pressure with the ends of the fingers do not disappear quickly.

Few deaths among the young are attributable to dropsy. When it does prove fatal it is through interference with the action of the lungs, or heart, or brain.

The *cure* of any dropsical condition of the system cannot be effected save through the removal of its cause; but in most cases it can be temporarily relieved by stimulating the functional activity of the skin and kidneys, and by opening the bowels freely.

HYDROCEPHALUS.

By hydrocephalus is meant water in the head. It is a local dropsy, caused by disease of an inflammatory nature in, or about the brain. It may come on quickly, or gradually, and it generally proves fatal in a few months. About one hundred and fifty children die from it every year in Philadelphia, most of whom are under two, and nearly all under ten years of age. Of these deaths nearly two-thirds are of males. The scrofulous and delicate are most liable to it.

The *symptoms* of this disease develop slowly in most cases. Before any increase in the size of the head occurs, there may be languor, loss of appetite, squinting and convulsions.

Debility and emaciation soon result ; and the mental faculties become blunted. The degree of enlargement of the head is not infrequently enormous.

The prospect of success in the *treatment* of this disease is never very good. The action of the skin and the kidneys should be promoted ; and it is well to keep the bowels open. Especially should efforts be made to tone up the system. Plenty of good nourishment, as well as all possible hygienic measures, is called for. Iron and other tonics may be used. At the start, and for some time after, the nape of the neck may be frequently irritated well with mustard, or pepper ; and rubbing the whole head with these agents and oil is of service. Bandages should be applied loosely, if at all ; for the brain cannot bear much pressure.

CHAPTER VIII.

ACUTE GENERAL DISEASES.

Preliminary Remarks—Mumps—Hooping-Cough—Measles—Scarlet Fever—Epidemic Roseola—Diphtheria—Small-pox—Chicken-pox—Typhoid Fever.

PRELIMINARY REMARKS.

In this chapter I will treat of such contagious and infectious diseases as affect the whole system, and which generally result in recovery, or death, within a month, or so, from the time of their onset. Mumps, hooping-cough, measles, scarlet fever, epidemic roseola, diphtheria, small-pox, chicken-pox, and typhoid fever, are all the members of the class which are apt to occur in early life, and consequently all of which I am called upon to speak. In this connection it may not be amiss to say that the term acute is applicable to any active disease, or morbid condition of comparatively short duration. It is used in contradistinction to chronic.

The blood is the seat of all acute general diseases. In it floats the agent, the poison which produces the symptoms which are peculiar to each. But it is more than probable that it is by impressing the nerve-centres that the morbid matter of any of them brings about at least the common features of the class.

Acute general diseases are all accompanied with FEVER, more or less marked in character. The body is said to be feverish when it is in a state of excitement, the temperature high, the heart-beats or pulse frequent, the skin dry, the secretions scanty, and the digestive and mental functions disturbed. Let it be remembered that fever is not in itself a disease; it is only a part, a symptom of a disease. What are commonly

spoken of as fevers are diseases in which fever is a prominent factor. All the diseases of the class under consideration are fevers.

Excessive heat of the body is the leading characteristic of the febrile state. That great German student of disease, Virchow, says, "Fever consists essentially in elevation of temperature, which must arise in an increased tissue change, and have its immediate cause in alterations of the nervous system." The heat of the body, whether in health or disease, is a result of nutritive activity or changes of a chemical nature, a sort of combustion, progressing within the system, in the blood and all the tissues. Let this action wane and the temperature will fall; let it increase and the temperature will rise. As stated elsewhere, the average temperature of the body in health is about ninety-eight and four-tenths degrees, with a health range of about three-quarters of a degree above and nearly as much below. In disease it may fall as low as ninety-five degrees, and rise as high as one hundred and twelve.

Under all circumstances, as said above, an abnormal degree of heat of the body is an indication of an abnormal degree of action within it. In all febrile diseases scantiness of perspiration and of other secretions leads many to suppose that the glands of the skin and the kidneys and other organs are unnaturally inactive; but they are always just the reverse. The moisture that is present either on the skin or within the body tends to evaporate unusually fast on account of the heat being unusually high. This explanation also throws light on the cause of the thirst which exists in these diseases.

All acute general or blood diseases have a certain course to run; once they are started it is impossible to cut them short. The length as well as the severity of an attack of any of them, however, can be lessened, in a measure, by judicious treatment.

As there is a loss of appetite at first in all cases of every acute general disease, much eating then will only serve to increase the existing derangement of the digestive organs. Thirst should be allayed by either cold water, or milk, or lemonade. Times ago liquids were not allowed, save in very small amount; but in harmony with the dictates of an enlightened medical philosophy they are now given freely. Nature prompts the longing for them, for they tend to subdue fever, to reduce the temperature of the body. It is always proper to give a dose of castor oil, or magnesia, to open the bowels well; and it cannot be given too soon in any case. For the fever, syrup of ipecac., either alone or with the solution of the acetate of ammonia, or the sweet spirits of nitre, given in small doses, four, or five times in the twenty-four hours, is very beneficial. It and other anti-febrile remedies act mainly by favoring the passage of liquids through the system, by favoring evaporation.

As excessive heat is the great source of death in the diseases in question, it must be combated earnestly when it runs very high. The use of water, or any liquid, and the medicines I have just spoken of, is not the only way to do this. Elsewhere cool air has been spoken of as serviceable; but a still more effective means is the application of either lukewarm or cold water to the body. The whole person may be sponged repeatedly; and each time let the skin be kept moist until the temperature is brought down near to the normal degree. The operation may be hastened by fanning, for it hastens evaporation. Of course, the common practice of placing a wet cloth on the head, or any part, in order to cool it, will have the reverse effect unless it is cold and renewed very often. In not a few cases a cold-bath is recommended of late by some physicians; but it is sometimes dangerous. Sponging the body as I have directed is in all respects preferable.

I am aware that perhaps the majority of people are of the

opinion that it is dangerous to even wash the face of a patient affected with a fever; but they are, undoubtedly, in error. It is worth while to quote the following remarks of Dr. West, on this and other points: "There is a fear of washing the surface, or of changing the linen, lest the rash be driven in, or cold should be taken in either of these ways. Even in measles, however, in which alone there is the least ground for any such fear, if lukewarm water be used, and if only a small part of the body be washed at the time, there is no danger even from frequent washing; while the passage of a damp sponge frequently over the surface is a very great comfort, in many instances, to the patient whose skin is burning hot with fever. The same remark applies to changing the linen, which indeed needs to be done more frequently in the course of fevers than of almost any other disease. The same kind of objection, and with no better reason, is often raised to allowing cold drinks to the patient, though they are most refreshing to persons suffering from burning thirst; and lukewarm water, or toast-water, or barley-water afford but a poor substitute for the cold water for which the patient longs. The quantity of water given at a time should not exceed one, or two tablespoonfuls, but that may be given quite cold, and may be repeated almost as often as it may be asked for. I may just add that no more should be given to a child than it may be safely allowed to take at once; it will be content with a tiny cup, if quite full, when it would fret exceedingly at being compelled to set down a vessel, however large, unemptied. Another prejudice, which shows itself more in ill-advised remarks than in acts, concerns the nourishment required by patients during a fever. For days together a child may perhaps take nothing but a little tea, or barley-water, or thin arrowroot, and this in quantities so small as would not have sufficed it when in health for a single meal. All this time, too, the little one may seem to be growing

worse and worse, and the natural anxiety of friends makes them fear lest the child should sink for want of nourishment. It should, however, be borne in mind that when fever runs high no food can be properly digested; that food not digested would do harm and disorder the stomach and bowels, and thus, perhaps, destroy all chance of recovery; and that to determine when to give nourishment, or to order wine, instead of being an easy matter which any nurse can settle, is often one of the most difficult points for the most skillful doctor to determine."

MUMPS.

Mumps is a very familiar disease. It is a fever the chief characteristic of which is inflammation of the glands in which the saliva is secreted. Hardly ever is it so severe as to prove fatal; it is generally a very mild affection. Sooner or later, the great majority of children suffer from it. More males, perhaps, than females have it. It is most apt to occur from the fifth to the seventh year, and about the period of puberty. Contagion is, probably, the sole cause of it. A second attack is seldom, or never experienced.

The *symptoms* of this disease begin to appear in about two weeks after exposure to the cause, and develop very rapidly. The most obvious of them is a swollen, painful condition of the two parotid glands, the organs in which most of the saliva is formed, and one of which is situated below and behind the lobe of the ear, on either side. Hence the disease is called PAROTITIS by many physicians and others. These parts are usually affected within a day, or two from the onset of the disease. Both do not always become inflamed. Very seldom does an abscess result. There is never alarming difficulty in breathing. The fever increases for the first three, or four days, and then it and all other symptoms begin to subside, and the patient is well in a week, or ten days from the

start. The inflammation may shift suddenly from the salivary glands to the breasts, or testicles, but this does not take place often.

It is rarely hard to identify this disease. The parotid glands may become inflamed from other causes; but when the inflammation of them is otherwise induced it very seldom develops as fast. Mumps may always be suspected if cases of it are known to be in the neighborhood.

Careful nursing is all the *treatment* required for this disease. The patient need not necessarily remain in bed, but it is wise to keep within doors for a week, or so. Draughts should be avoided. The food should be liquid; and as a rule, the less of it is given the better. Lemonade may be taken freely. Besides it, a little syrup of ipecac., alone or with the solution of the acetate of ammonia, may be given, for the fever. An occasional dose of paregoric will be of service if there is great restlessness. A dose of magnesia, or some other cathartic, is generally given at the start. To allay soreness about the neck either a flaxseed-meal poultice or a well-greased piece of flannel may be applied. If the head aches severely let it be bathed frequently with water.

HOOPING-COUGH.

Hooping-cough is a disorder of the system attended with a catarrhal condition of the air-passages, and a characteristic cough. It is the cause of much suffering and debility; but it is not often fatal, except among the very young. There are about a hundred deaths from it yearly in Philadelphia, nearly four-fifths of which are children under two years of age. A third more females than males die from it. It is caused by contagion. At times it prevails epidemically. A second attack of it is of rare occurrence.

The weight of this disease seems to fall on the lungs; for coughing excited by a catarrh of these organs is the worst of

its *symptoms*. Hence it is called *PERTUSSIS*, by many physicians and others. The cough is spasmodic in character; it comes at intervals and in spells. At the end of each fit of coughing the air being drawn forcibly into the lungs causes a peculiar hooping or whooping sound. The gravity of the disease in any case is indicated by the severity and frequency of the coughing spells. If there are less than thirty of these in the twenty-four hours, the attack may be regarded as mild. They are apt to be worse and to occur oftener by night than by day.

The symptoms of the disease begin to appear about a week after exposure to the cause, and at first they resemble those of a severe cold on the chest. In a week, or so, the fever has largely subsided; but languor and the cough may last for from six weeks to three months. Indeed, the characteristic cough does not set in until after the catarrhal symptoms have, for the most part, disappeared. The expectoration is sometimes profuse, thick and difficult to get up. Vomiting is frequently produced by the coughing; and it causes hemorrhage from the nose, eyes and elsewhere occasionally. But though often alarming, it never produces fatal strangulation.

It is for the most part through complications that this affection proves fatal. Convulsions, bronchitis and pneumonia are some of those which may arise.

In the *treatment* of this disease reliance must be placed mainly on careful nursing; for experience has shown that medicine can do little for it. Let the strength of the patient be husbanded by careful regulation of the diet. Fresh air is of great value. The clothing should be warm. At the start a dose of magnesia may be given, and lemonade may be used freely until the fever begins to vanish, and in less amount afterward. A mixture of syrup of ipecac. and the solution of the acetate of ammonia is serviceable. Restlessness may be relieved by paregoric. Should the coughing spells come fre-

quently and be very severe, it may be well to give moderate doses of chloral for a time. Rubbing the chest with mustard and oil is beneficial. Sometimes a mustard-plaster does good. The vapor which arises from hot water in which a few drops of carbolic acid have been placed may be breathed to advantage in some cases. If there be little appetite, with a tendency to debility, wine of iron should be used in small doses three times daily. Aromatic spirits of ammonia, wine and brandy are called for if the system is greatly enfeebled.

MEASLES.

Measles is a fever accompanied with catarrhal symptoms and a characteristic eruption. It is not generally of a grave nature; still, about three per cent. of those affected with it die. It is, in proportion to the number attacked, more fatal among adults than children. There are seventy-five deaths from it yearly, on the average, in Philadelphia; and of these nearly ninety per cent. are of persons under five years of age. The mortality is greatest among those in their second year; but it is not much less among those in their first. Among those under three years there are more deaths of males than of females; but among those over three the reverse is the case.

This disease is *caused* only by contagion. It is always present in some communities; but severe outbreaks of it are not uncommon. It may be caught at a considerable distance from a person suffering from it; and as is the case with, perhaps, all contagious diseases, it may be carried from place to place through clothing and the like.

The *symptoms* of this disease begin to appear in from ten days to two weeks after the date of exposure to the cause. On falling ill the patient complains of feeling unwell generally and is soon feverish and affected apparently with a cold both in the head and on the chest. There is often some nausea and the bowels are usually constipated. Later there may be a tendency to

diarrhœa. The tongue is furred commonly, but remains moist. A frontal headache is experienced. The fever, cough, watering of the eyes and slight discharge from the nose have mostly not been present longer than four days when an eruption comes out, first about the head and neck, and on the second day, over most of the body. This eruption is peculiar: it is dark-red in color, and is in slightly elevated spots. At first the spots are small and round, but when fully developed, are as large as half the finger-nail, and are irregular in shape. Their presence gives the skin a mottled appearance; and on examination it will be found that they tend to run into crescentic and circular patches. In some cases the eruption is much more marked than in others. It is checked by the occurrence of bronchitis, or pneumonia. The itching which attends it is seldom very great. The temperature rarely runs far above a hundred and three degrees; and it falls quickly after the eruption begins to fade. The mental faculties are apt to be dull. Occasionally there is some delirium while the eruption is coming out. Convulsions may occur. Within a week from the start all the symptoms have begun to vanish, and by the ninth, or tenth day there is scarcely a trace of the rash to be seen. Small scales continue to be shed for a few days. Of these I may say that they do not constitute the contagion. It is really before the eruption has appeared and while it is appearing that the disease is most catching.

Good nursing is a very essential part of the *treatment* of this disease. The great dangers to be guarded against are inflammation of the eyes and of the air passages. The patient should be kept in his room, if not in bed, until the eruption has entirely disappeared. On account of his eyes being sore he should not be exposed to a bright light. It is well not to have the temperature of the room high; it is safer to have it moderately low. For exposure to a slight draught is sufficient

to do great harm to a person who is habitually very warm. Of course, draughts should be carefully guarded against. The face and all other parts of the body may be sponged frequently with lukewarm water; for it will lessen the fever and promote comfort. If the eruption does not come out well a warm-bath may be given; after which a glass of hot lemonade will be of service. A liquid diet is best, and it need not be very abundant. At the start it is proper to give a dose of magnesia. A mixture of syrup of ipecac. and either the solution of the acetate of ammonia or sweet spirits of nitre may be given, in small doses, every four hours. Should there be restlessness a little paregoric will do good. If the catarrh of the lungs is severe, apply a mustard plaster to the chest in front, and also one behind. When the period of convalescence arrives it is exceedingly important that the patient be kept from exposing himself to draughts. Then it is that fatal complications are apt to arise. It is unnecessary to restrict the diet much. If there is debility, wine of iron may be given for a while.

SCARLET FEVER.

Scarlet fever, or as it is often called, SCARLATINA, is a fever attended with a peculiar scarlet eruption and an inflammatory condition of the parts about the throat. Excepting consumption of the lungs, pneumonia, and typhoid fever, no other disease destroys as many lives. About five hundred deaths are due to it, on the average, every year, in Philadelphia. This number is somewhat more than three per cent. of the total mortality. There is reason to believe that six per cent. of all attacked with it die; but in some outbreaks of it the proportion is over twice this much. Of the deaths from it, four-fifths are of persons under five, over a fourth are persons under two, and about a twelfth are of persons under one. But few are of persons over ten. Of persons under five, more

males than females succumb to it ; but of persons over five, the reverse is true. Second attacks of it occasionally occur.

Some communities are never free from this disease ; it lingers year after year. It prevails far more extensively and causes far more deaths in the Northern than in the Southern States of the Union. In Philadelphia it seems to be particularly prevalent every fifth year ; and the order of the seasons in respect to their mortality is, spring, winter, summer, autumn.

The *cause* of this disease is, perhaps, always contagion. Not a few authorities, however, are inclined to attribute it very largely to emanations from faecal or sewage matter. Whether such emanations will in themselves start the disease is extremely doubtful ; but that they tend to promote the spread of it is certain. Breathing any kind of foul air, or living in any way in a manner contrary to the laws of health, favors the contraction of all diseases. It is in the crowded, filthy parts of every city that pestilence in every form generally breaks out. The contagion of the disease under consideration is very active, and is cast off largely by the skin. It is, doubtless, capable of floating easily in the air.

The *symptoms* of this disease begin to appear in from two days to a week after exposure to the cause. At first they are lassitude, loss of appetite, nausea, headache, and pains in the back and limbs. These symptoms are speedily followed by fever, and soreness of the throat ; and these by a diffused scarlet eruption, which starts first about the face and neck. On looking closely at the skin it will be discovered that the rash is made up of minute pimples. It begins to fade from the fourth to the sixth day, and is gone entirely by the ninth day, or so. When it begins to vanish desquamation or scaling of the skin sets in. There is considerable itching experienced then. As soon as the eruption develops the temperature rises, and in most cases quickly reaches a hundred and five degrees,

or higher. The pulse is generally very frequent; among young children it may be even more than a hundred and sixty to the minute. There is usually some delirium. The tongue at first is covered, except at the tip and sides, with a whitish-brown fur; but it soon assumes a strawberry-like aspect, which is due to the enlarged, reddish papillæ of it projecting through the coating present. The throat is red and swollen. The bowels are mostly constipated.

In what is called the simple form of the disease none of the symptoms are very marked; and it seldom proves fatal.

The anginose form of the disease is that in which the throat is severely affected. In it the tonsils may gather, break, and keep discharging for a number of days; or they may become covered with a whitish-brown deposit, which on disappearing leaves their surface in an ulcerated condition. There is great danger of the inflammation extending from the throat up the small passage which exists (the Eustachian tube) into the ear. When this occurs the gathering and ulceration which ensue are apt to destroy the drum and other portions of the organ, and thus injure the hearing seriously for life. Sometimes abscesses come in the neck, and the discharge from them, being hard to stop, is exhausting to the patient.

The malignant form of the disease is that in which all the symptoms are alarmingly severe from the start. The system may not react from the impression of the contagion; and if it does the eruption either comes out poorly and speedily fades, or turns livid in hue. In some instances the mental faculties are greatly depressed; and in some there is hemorrhage from the stomach and bowels. When the body grows cold in parts, or throughout, the patient is in a very precarious condition. In some cases the prostration is so marked from the first that life is extinguished in a few hours.

In all three forms of the disease the kidneys are out of order; and the derangement in their function is apt to lead

to dropsy. In most instances the dropsy appears in about ten days after the eruption has begun to fade. Mild cases are not more exempt from it than grave ones; the reason, to some extent, probably, being that less care is exercised in treating the former than the latter.

The *treatment* of this disease, in even its simplest form, should be conducted carefully and intelligently. It is very essential that the patients be not subjected to draughts. I have elsewhere spoken of the importance of keeping the air of the room in which there is a case of a disease like this, pure and cool; but I may here quote a few lines from Dr. Chavasse on the subject. In speaking of the treatment of the disease under consideration he says: "What is the first thing to be done? Send the child to bed; throw open the windows, be it winter, or summer, and have a thorough ventilation; for the bedroom must be kept cool—I may say cold. Do not be afraid of fresh air, for fresh air for the first few days is essential to recovery. Fresh air and plenty of it, in scarlet fever is the best doctor a child can have. Let these words be written legibly over your mind." During the first few days little food is required; and whatever is given should be liquid. Later, besides milk, beef-tea and other nourishing articles should be given freely. A dose of magnesia is in order at the start. Lemonade is useful all along. Small doses of a mixture of syrup of ipecac. and either the solution of the acetate of ammonia or sweet spirits of nitre may be given every four hours. In place of this mixture a solution of chlorate of potash may be used. It is also useful as a gargle. If there is uneasiness some paregoric will be of service. Should the system be greatly depressed aromatic spirits of ammonia, or wine, or brandy is called for. Anointing the body with lard, or glycerine is advantageous, but sponging with tepid water, in which a little carbolic acid soap has been dissolved is quite as good. Let this be done at least twice a day. If the head aches

much cold water may be freely applied to it. A poultice of flaxseed-meal may be placed on the neck if there is much pain. Sometimes ice is of advantage. When the eruption begins to disappear plenty of very liquid nourishment should be given, so that the kidneys may be kept active. The patient is not out of danger, as a rule, for at least a month from the beginning of the disease; and contagion is thrown off for about that length of time. If there is debility wine of iron may be used.

EPIDEMIC ROSEOLA.

Epidemic roseola is a contagious fever attended with an eruption somewhat like that of measles. Other names for it are RÖTHELN, RUBEOLA NOTHA, and GERMAN MEASLES. It is only of late that much attention has been given to it. Hitherto it has been confounded with measles, just as scarlet fever generally was up to about a century ago. It occurs mostly in epidemics, and usually among children. Rarely is it otherwise than mild in character. Extremely few deaths are caused by it.

The *symptoms* of this disease begin in from two days to a week after exposure to the cause. There is fever for a day, or two, when a dusky red, spotted rash appears. This rash starts on the face and the extremities, and is at its height by the third, or fourth day. As it fades there is some scaling of the skin, accompanied with itching. The spots of it are irregular in shape. The eyes and the throat are both slightly inflamed. In a week the patient is convalescent.

This disease differs from measles as follows: the initiatory fever is less marked, the rash is brighter, the patches of the rash are smaller and far less inclined to be crescentic in shape, the catarrh in the head and on the chest is comparatively slight, and there is soreness of the throat; and from scarlet fever as follows: the fever is less—the temperature seldom running much above a hundred and two degrees, the rash is

less bright and it is in patches, the tonsils are but little affected, the attack is shorter in duration, and dropsy is not liable to occur after it. The fact that one who suffers from it is not thereby made any less susceptible to either of these diseases is strong proof that it is not a hybrid of them.

No special *treatment* is called for in this disease. That given for measles is suitable.

DIPHTHERIA.

Diphtheria is a fever characterized by a marked tendency to anæmia and debility, and the formation of a membranous deposit in and about the throat and on any broken parts of the skin which may be present; and it is followed frequently by paralysis of a temporary character. In former times it was frequently called PUTRID SORE THROAT. Dr. Bretonneau, of France, gave the first careful description of it in 1826. It is very grave in nature. In many communities it takes rank, perhaps, with scarlet fever in its degree of fatality to children; and it seems, as a whole, to be a growing scourge. For the last five years there have been on the average about five hundred deaths from it yearly in Philadelphia, of which over ninety per cent. have been of persons under ten years of age. It is particularly destructive to persons under five. More females than males die from it.

The chief *cause* of this disease is certainly contagion; and it is floatable in the air. Some, however, believe that it is nearly always due to an infection, in some way connected with the gases and other exhalations which arise from fecal matter and filth generally. At any rate, there can be no doubt but that crowding is very favorable to its propagation. When one case of it occurs in a family, the chances are great that there will be more, unless extraordinary precautions are taken. A second attack of it is uncommon. It sometimes prevails epidemically.

The *symptoms* of this disease begin to appear from a few hours to several days after exposure to the cause. At first they are, feverishness, depression of spirits, slight soreness about the throat and enlargement of the glands on either side of the neck. Unless in severe cases there is little nausea, but the tongue is generally heavily coated. The breath is usually foetid. Occasionally there is diarrhœa. On examining the throat all the parts about it will be found to be swollen and inflamed, and, as early as the second day, covered with patches of a yellowish-white material. This deposit may become thick and very abundant. It is a marked feature of the disease. A similar coating is apt to appear on any wound, or sore, on any part of the body. Evidently the blood is in a badly disordered state. The extreme debility which exists is very indicative of this. There is not generally much difficulty in swallowing; nor is there much cough, hoarseness, or difficulty in breathing, unless the deposit appears in the wind-pipe. The fever rarely becomes high, except in cases in which the wind-pipe is involved. In such cases the temperature may run up to and beyond a hundred and six degrees. The pulse is apt to be very frequent and feeble. Delirium is not often present. The occurrence of it is of bad import. In every case there is more or less prostration of the entire system from the start; and it is, probably, the greatest source of danger to life in all. Usually within ten days the symptoms have begun to subside. When death takes place it is generally within a week.

What is called the simple form of this disease is that in which all the symptoms are light. The croupous form of it is that in which the deposit occurs markedly in the wind-pipe. This form is accountable for many deaths. And here I may say that many physicians are of the belief that membranous croup is closely related to the disease under consideration. It is probable, however, that they are in error. The ulcerative

form of the disease is that in which ulcers largely take the place of the deposit about the throat; and it is mostly very serious. The malignant form is that in which all the symptoms are overwhelmingly severe from the beginning.

Any case of this disease may be followed by paralysis. This is commonly observable soon after convalescence has set in. It may be confined to parts, or may involve the greater portion of the body. The muscles used in swallowing and in speaking are the most liable to be affected. Sensibility as well as power may be impaired. The voice, hearing, sight and, in short, all the faculties may suffer. The impression made on the system by the disease is the cause. Paralysis thus induced nearly always disappears within two, or three months.

This disease demands very careful, intelligent *treatment*. Nor will all that it is possible to do suffice to prevent death from occurring in a large proportion of cases. No matter how mild the attack may seem to be, let the patient be put to bed and let attention be given to supporting measures from the start; for the tendency to anæmia and exhaustion is always very pronounced. The air should be pure; and the temperature of it should not be high. Unless there is nausea, milk, beef-tea, and other liquid nourishing foods should be given freely. The body may be sponged several times daily with lukewarm water containing some carbolic acid soap. Let this be done without jostling the patient much; for sometimes a very slight effort is sufficient to produce fatal syncope. As for medicine, it is proper to give a dose of magnesia, or castor oil at first, and also later, if there is constipation. Large doses of the wine of iron should be given three, or four times a day. Aromatic spirits of ammonia, wine, and other stimulants are called for when exhaustion exists. The use of chlorate of potash is beneficial. Large doses of it may be given four times daily. A pint of water in which a drachm

of it has been dissolved may be used as a drink. In addition to lemonade, no other febrifuge than this is necessary, as a rule. It serves also as a gargle. Besides it, lime-water, and also a weak solution of carbolic acid may be used for this purpose. Allowing small pieces of ice to dissolve in the mouth is grateful to most patients. The occasional application of a counter-irritant to the upper part of the chest and throat may do good; but as it is wrong to break the skin pepper should be used in preference to mustard. If there is much difficulty in breathing it may be advisable to produce vomiting through wine of ipecac. All attempts to remove matter from the throat forcibly are likely to be harmful. Of course, swabbing with any of the gargles spoken of above may be practiced. When strangulation is threatened it is justifiable to cut into the wind-pipe in front; but this operation is in itself very dangerous and very rarely proves beneficial.

Beyond the wine of iron no medicine is required during convalescence from the disease. Nor does the paralysis which may arise, need any special medical treatment. Good food, pure air and hygienic living generally will soon restore health and strength.

SMALL-POX.

Small-pox or VARIOLA is a fever attended with a marked eruption, which is at first papular, later vesicular, and later still pustular. Until the introduction of inoculation and vaccination it was the most destructive of all pestilences to both old and young. The negligence of people renders it still possible for occasional epidemics of it to occur. There was a wide-spread outbreak of it from 1870 to 1872. In Philadelphia it caused between four and five thousand deaths, of which a half were of persons under ten years, and about thirteen per cent. were of persons under one. Over a quarter

of those attacked died. Among children under two years, however, about three-quarters of the cases proved fatal. Very few infants recovered from it. The deaths of males were a third more than those of females.

This is, perhaps, the most communicable of all diseases; and it is always *caused* by contagion. This peculiar virus floats readily in the air. It is cast off in greatest abundance in the later stages of the disease. Crowding and unhygienic surroundings are promotive of its ravages.

The *symptoms* of this horrible disease begin to appear about twelve days after exposure to the cause. At first they are, languor, headache, vomiting, aching of the limbs, severe pain in the back and fever. In children there is usually diarrhœa; and among them drowsiness and convulsions are not uncommon. The more pronounced these early symptoms are the more grave is the attack likely to be. About the third day small, red papules or pimples come out, first on the face and neck, and later all over the body; and these, about the sixth day develop into vesicles, which by the ninth day become pustules, around which the skin is greatly inflamed. The odor which arises from the matter which oozes forth then is both very abundant and very bad. By the twelfth day the pustules flatten and scabs are formed, which adhere until about the fifteenth day. The amount of the eruption is indicative, as a rule, of the gravity of the attack. It is usually worst on the face. The throat and parts adjacent are affected by it, and hence are sore. If the wind-pipe suffers much there is a troublesome cough, and the voice is very husky. When it is near its height the fever, which has been lessening since the third, or fourth day, increases for a day, or two, and then gradually vanishes. This is called the secondary, and the other the primary fever. In the former the temperature does not generally run above a hundred and four degrees; while in the latter it often rises above a hundred and five.

The whole period of the disease is about eighteen days. Death occurs after the pustules have appeared, except in very malignant cases.

The discrete form of the disease is that in which the pustules though very large are so scattered that they are distinct from one another on the face; the confluent form is that in which the pustules are numerous and inclined to run into one another; and the malignant form is that in which all the symptoms are extremely severe from the beginning. The first form is the least dangerous to life.

VARIOLOID or MODIFIED SMALL-POX is the mild form of the disease which occurs occasionally in persons who have been vaccinated. In it the pustules are comparatively small and few; and all the other symptoms are slight, as a rule. It causes little pitting, and death rarely results from it.

During convalescence from small-pox there may be enlargement of the glands, gatherings and inflammations in different parts of the body.

Good nursing is a very essential part of the *treatment* of this disease; and in it the nurse has neither a pleasant nor an easy duty. Here there should be no hesitancy about isolating the person affected, whether young or old; and everything possible should be done to promote cleanliness. The ventilation should be strictly attended to and every article about the patient should be changed frequently. Milk, beef-tea, and bland nutritious food of all kinds should be given freely almost from the start, if the stomach is settled enough to digest them. I may say in the words of Dr. Bristowe, of London, that "in the mildest forms of small-pox medicinal treatment is scarcely called for; in the severest it is useless; and, indeed, under any circumstances it has but little influence over the course of the disease." A dose of magnesia may be given at the start, if the bowels are constipated; and lemonade is in order all along. A mixture of ipecac., paregoric, and

either the solution of the acetate of ammonia or the sweet spirits of nitre may be used in small doses, four times a day. To every ounce of it two, or three drops of carbolic acid may be added. Iron may be used when the pustules begin to form, for it may hasten their maturation and disappearance. If there is great prostration aromatic spirits of ammonia, or wine, or brandy will be of service. A gargle of chlorate of potash is useful. When the pustules are developed sponging the body is not enough; it should be washed frequently with warm water and carbolic acid soap. The face may be kept covered with a thin poultice of flaxseed-meal; for in this way pitting may be prevented, in a measure. Or anointing it with glycerine containing a little carbolic acid may be practiced.

CHICKEN-POX.

Chicken-pox or VARICELLA is a mild fever of a contagious nature, attended with a vesicular eruption which comes out in successive crops. It bears no relation to small-pox; nor does vaccination lessen the susceptibility to it. Contagion is the cause of it. Epidemics of it are of frequent occurrence. It rarely affects adults. A second attack of it does not take place. Scarcely any deaths are caused by it, except among infants; and among these they are very few.

The *symptoms* of this disease appear in about a week after exposure to the cause, and are all slight. A languid, feverish condition of the system is usually present for two days before the eruption comes out. The latter consists, at first, of small scattered pimples, and later, vesicles, which being transparent resemble little blisters. By the third day, or so, these vesicles are pear-like in appearance, and on the fourth, or fifth they scab. No pitting is left. It is well, however, not to let the patient scratch, at least the face. The occurrence of successive crops of the eruption prolongs the attack, but recovery may always be looked for within ten days.

Besides careful nursing this disease requires no *treatment*. A dose of magnesia, and lemonade, and other remedies suitable for fever may be given.

TYPHOID FEVER.

Typhoid fever is a fever in which there is, in adults at least, an inflammatory change in certain intestinal glands and generally more or less of a peculiar rash. ENTERIC FEVER and SLOW NERVOUS FEVER are other names of it. Cases of what are called INFANTILE REMITTENT FEVER and WORM FEVER are usually cases of it. It is very common almost everywhere, and is accountable for more deaths than any other disease, excepting consumption of the lungs and pneumonia. Nearly five hundred lives are destroyed by it yearly in Philadelphia. About five per cent. of all affected with it die. It is generally mild in very early life, but it occurs far more frequently than many seem to suppose. A fifteenth of the deaths from it in Philadelphia are of persons under five years of age, a fifth are of persons under fifteen, and a third are of persons under twenty.

This disease may be *caused* by contagion. One, however, does not run much risk of catching it from a person suffering from it, save through the dejections. Hence, it is very important that the latter should not only be disposed of quickly, but in such a way that others may not be infected by them. The contamination of the water supply should be carefully guarded against. The passage of such discharges into sewers is doubtless accountable for many cases of the disease. That the disease may arise otherwise than through contagion is likely. Foul air is held by some authorities to be the main source of it. Drinking impure water will probably occasion it. Anxiety and depressing causes of all kinds favor its occurrence. It is in the autumn that it is most prevalent. There are far more cases of it some years than others. A

person who has had an attack of it is not very liable to have another. It is remarkable that there are few cases of it wherever chills and fever and other malarial affections are common.

The *symptoms* of this disease begin to show themselves in about two weeks after exposure to the contagion of it, and they develop slowly. For several days there are languor, loss of appetite, pains in the limbs, headache and drowsiness. Bleeding at the nose occurs in many cases, and a cough is common. Fever soon sets in and generally becomes marked. The temperature on the evening of the fourth day is mostly up to, or a little above a hundred and four degrees. Day after day it will be found to be from one to two degrees higher in the evening than in the morning. The pulse seldom reaches much higher at any time than a hundred and forty. There is some muttering, as a rule. Restlessness is more marked at night than by day. The tongue is coated but is not dry, except in bad cases; and the breath is foetid. The face is deeply flushed; and besides fever blisters about the mouth and sudamina, rose-colored, lens-shaped spots, which are slightly elevated and disappear on pressure, may be present on the trunk, toward the end of the second week. These spots come out in crops and are rarely numerous. About the tenth day the sense of hearing is usually somewhat blunted. A tendency to vomiting and diarrhœa exists from the start; but these symptoms are far less marked in children than in adults. Except in the very young the abdomen is apt to be somewhat swollen, with tenderness on pressure in the region of the right groin, from about the end of the first week. The tenderness in the region of the right groin is due to the fact that in the portion of the intestine which lies there ulcers are present. These ulcers are a source of great danger to life; for if they destroy the intestinal wall, fatal inflammation of the delicate membrane which surrounds it (the peritoneum)

will follow. In children and old people they are not marked. This is one of the reasons why the mortality from the disease is comparatively small among these classes. From two to three weeks is the average duration of the disease in children, and about a month in adults; but convalescence is generally slow.

Beyond attention to cleanliness and other hygienic matters the *treatment* generally called for by this disease is simple. Very little medicine is required. A dose of castor oil, or of magnesia may be given at the start, unless there is considerable diarrhœa. In addition to lemonade a mixture of the solution of the acetate of ammonia and a little syrup of ipecac. may be used in small doses, every four hours. If there is much restlessness, or diarrhœa, paregoric will be serviceable. For the latter trouble it may be combined with the spiced syrup of rhubarb and the aromatic spirits of ammonia. The catarrh on the chest seldom needs any special remedies. If there is great exhaustion stimulants are serviceable. The body should be sponged with tepid water twice, or thrice daily. The food should be liquid from the beginning to the end of the attack; for any solid article may produce a serious irritation in the bowels. Milk, soups, beef-tea and eggs are among the things suitable. For the first two weeks it is best, as a rule, to limit the amount of nourishment given. During convalescence it is exceedingly important not to use any food of an indigestible nature, for a relapse is easily produced. Iron is then very useful.

CHAPTER IX.

DISEASES OF THE DIGESTIVE SYSTEM.

Preliminary Remarks—Thrush—Aphthæ—Canker of the Mouth—Quinsy—Catarrh of the Stomach and Liver—Dyspepsia—Jaundice—Diarrhœa—Constipation—Cholera Infantum—Cholera Morbus—Dysentery—Colic—Intestinal Worms.

PRELIMINARY REMARKS.

The various parts of the body which either retain the food or assist in transforming it into such a state that the nutrition which it contains can be absorbed and pass into the blood-vessels, constitute the digestive system

This collection of organs is extensive and of a complicated description. The mouth, the gullet, the stomach, and the small and large intestines form a connected passage, which is about five times the stature in length. In an adult the GULLET or œsophagus is about nine inches in length; and its walls being very elastic an object an inch or more in diameter may pass through it. The STOMACH is a pear-shaped pouch of the capacity of about a quart, and it sits in the abdomen with the smaller end pointing toward the right side of the body. Starting from the smaller end of the stomach the SMALL INTESTINE runs in horizontal folds down to the right groin, where it terminates abruptly in the large intestine. It is about twenty feet in length, and considerably over an inch in diameter when distended. Beginning at the right groin, the LARGE INTESTINE ascends to the level of the bottom of the stomach, curves across to the left side and descends to the point of exit from the body. It is about five feet in length,

and over two inches in diameter when distended. The last six inches, or so, of it is called the RECTUM.

The secretions of the two PAROTID GLANDS, one of which is situated below and in advance of the ear on either side and the duct of which opens into the mouth opposite the second upper molar tooth, the two SUBMAXILLARY GLANDS, one of which is situated beneath the jaw at the angle on either side, and the duct of which opens into the mouth at a little eminence under the tongue, the SUBLINGUAL GLAND, which rests on the floor of the mouth and communicates with the latter by about half a dozen little ducts, and numerous small glands about the mouth, commingle to form the SALIVA, which serves to liquefy the food and also transform the starchy part of it into sugar (glucose). A great multitude of little glands are in the walls of the stomach, and they secrete an acid fluid called the GASTRIC JUICE, about seven quarts of which is thrown out every twenty-four hours, and which, by producing a sort of fermentation or chemical change in the food, turns it into a soft mass called CHYME. The secretion of the LIVER, a gland which weighs from fifty to sixty ounces, and is the largest in the body, is called BILE, and it passes into the gall-bladder, from which it empties, by a little duct, into the small intestine about four inches from the end of the stomach. From thirty to forty ounces of it is formed daily. From being antiseptic it tends to stop the fermentative action started in the food by the gastric juice, and being alkaline, on account of the presence in it of soda, it renders fatty matter absorbable. Moreover, as it is possessed of irritant properties it stimulates the functional activities of the intestines. The secretion of the PANCREAS or SWEETBREAD, a long thin organ which is situated beneath the stomach, empties into the small intestine a little beyond where that of the liver does. It is very profuse and it promotes fermentation, turns starch into sugar, and renders fat absorbable by emulsifying

it. In infancy it and the saliva are scanty ; and hence, starchy food is not well digested then. From the minute glands which exist all along the intestines there come secretions which act as lubricants, and perhaps otherwise. It has been estimated that nearly three gallons of juices is secreted by the digestive organs every twenty-four hours, of which about ninety-six per cent. consists of water. Of course, nearly the whole of it is absorbed again.

On eating a morsel of food it is comminuted by the teeth and mixed with the saliva. Passing into the stomach it commingles with the gastric juice, the flow of which it excites, and much of the watery and albuminous elements of it are taken up by the veins and lacteals. Whatever of it leaves the stomach passes into the small intestine, and mixing with the bile and pancreatic secretion it is absorbed gradually as it goes along. By the time the large intestine is reached there is little nutrient material remaining. Of the LACTEALS I may say that they are the little vessels like capillaries which take up the nourishment from the matter which is in the digestive track ; and that after passing through the MESENTERIC GLANDS, which are over a hundred in number, and in which their contents are somewhat changed, they unite to form the THORACIC DUCT, which empties into the vein from the left arm (the subclavian) near its juncture with the internal jugular. It requires from two to three hours to digest a full meal.

Considering how complex the character of the digestive organs and functions is, it is not at all surprising that diseases of them are common. So little attention is generally given to the healthfulness of the diet that it is rather strange they are not thrown into a morbid condition far oftener than they actually are. But a vast amount of disease of them does occur. A very large proportion of the diseases which afflict children are connected with them and may be traced, in the main, to errors in eating.

When the functional action of any of the organs of this system becomes disordered the digestive process cannot proceed properly, and consequently the whole body suffers.

The symptoms of the diseases of this system will be spoken of below, but I may say here that A COATED CONDITION OF THE TONGUE is one that is nearly always present. This symptom is not peculiar to these diseases, but it is generally marked in them. It is caused by exhalations from the stomach and lungs and by perversion of the secretions connected with the mouth. Doubtless people in general attach too much importance to it.

In treating disorders of this system the diet deserves special consideration. One thing about it which should be carefully borne in mind is this, that in all temporary functional derangements abstinence from all food is a remedy of supreme value.

THRUSH.

Thrush is often called WHITE-MOUTH. It is of very common occurrence among infants; but it is rarely in itself of a very serious nature. Delicate children who breathe impure air and live on an unwholesome diet are by far the most subject to it. Hence, it is oftenest met with among the poor, and especially in those reared carelessly on artificial fare. It may accompany different diseases, but in early life it is generally an independent affection. From the fact that a microscopic fungus (*oidium albicans*) is found in the deposit which attends it, some regard it as parasitic in nature.

The *symptoms* of this disease begin with congestion and inflammation of the lining of the mouth, fever, nausea, and diarrhoea. In a day or two a number of small, elevated, irregularly rounded, whitish points, like specks of curdled milk, appear on the tongue, cheeks, and parts about the throat. These exudations are brownish in color in severe

cases, and after falling off may be renewed several times. The whole digestive track is more or less involved. Excoriations about the anus or fundament are very liable to occur, unless great attention be paid to cleanliness. The attack may last from one to three weeks, or even longer.

Hygienic measures constitute the most essential part of the *treatment* of this disease. The entire mode of life of the patient should be brought into accordance with the laws of health; but at any rate, let him have pure air and wholesome food. A dose of magnesia alone, or in connection with the spiced syrup of rhubarb should be given as soon as the symptoms begin to appear; and chlorate of potash in doses of from two to five grains every four hours will be useful. Borax mixed with an equal amount of sugar, or in a little honey, makes an excellent local remedy. In place of it a little of the tincture of myrrh in water may be used, at a late stage of the disease. Poorly nourished children should have wine of iron for a while.

APHTHÆ.

Aphthæ is the name given to small reddish-bordered, whitish ulcers of the lining of the mouth, which mostly come and go within a week. These painful little sores are developed from an inflammatory vesicular eruption. The vesicles are in a cluster, are pearly in appearance, and break in a few days. The ulcers are usually very scattered; often there is only one. Sometimes there is disorder of the stomach and bowels and also feverishness. Comparatively few cases are met with among children. Nursing mothers often suffer. Constipation and debility tend greatly to cause the disease.

In this connection I may remark that an ulcer occasionally appears beneath the tongue in nursing children. It is caused mechanically. Two sometimes appear, one on either side of the frænum in those affected with whooping-cough, the cause

probably being pressure of the tongue on the teeth during the severe coughing spells which attend the disease.

The *treatment* recommended for thrush is also suitable for aphthæ. The other ulcers spoken of call for nothing more than the application of borax and honey, or glycerine, either alone or with a little chlorate of potash.

CANKER OF THE MOUTH.

Canker of the mouth is a yellowish-white ulcer with an inflamed border, situated on the cheek, the gum, or the lip. It develops gradually and may remain for weeks, or even months, but it is seldom of serious importance. It is usually seen in children between their second and sixth year. It is somewhat painful and tender. The saliva inclines to flow freely and the breath is offensive. Often there is some fever.

In *treating* this disease it is generally necessary to improve the condition of the system of the patient, by the use of nourishing food and all possible hygienic measures. The various remedies recommended for thrush, including the wine of iron, are also suitable here. If the ulcer tends to linger a little powdered alum may be applied to it twice a day. A mixture of powdered chalk and gum-arabic makes a good dressing for it.

QUINSY.

Quinsy is seated in one, or both of the tonsils, which are glands somewhat like almonds, situated one on either side of the tongue, near its root, and which secrete salivary matter; and it is an inflammation which may, or may not result in a gathering or abscess. Hence physicians very appropriately call it TONSILLITIS, the terminal letters *itis* being, in the names of diseases, expressive of inflammation. It is often alarming in character, but it is rarely fatal. Only from five to ten deaths are attributable to it yearly in Philadelphia, and

nearly all of these are of children under ten years of age. It is said by some that it is more apt to occur after than before puberty; but this is questionable. Certainly it is most destructive to life among the very young. Cases of it are not uncommon among persons of all ages.

The *cause* of this disease is generally obscure; but probably it always arises from exposure to cold.

The *symptoms* of this disease begin with feverishness, dryness and soreness about the throat, headache, and aching of the limbs. When the inflammation of the tonsil or tonsils is at its height, there is much discomfort and pain locally, and the throbbing headache is excruciating. The fever then is high, the pulse frequent, the tongue covered with a creamy fur, the breath foetid, the stomach inclined to turn, the bowels constipated, the voice peculiarly muffled and nasal, and the breathing hurried and somewhat difficult. In case an abscess is forming in one, or in either tonsil, relief cannot come until it is ripe, and breaks of itself, or is broken, or lanced. As the disease on beginning in one tonsil often involves the other, it may be somewhat prolonged; but recovery may generally be expected within eight days.

Through prompt and suitable *treatment* this disease may frequently be cut short. Let a dose of citrate of magnesia, or any other active cathartic, be given in connection with a mustard-plaster applied to the throat, a draught of warm lemonade, or of toddy, and a hot foot-bath, as soon as the symptoms begin to appear. These remedies should always be resorted to; and if they do not produce the desired effect within twenty-four hours, or so, a flaxseed-meal poultice should replace the mustard. In the poultice some laudanum may be placed if there is much pain. Or a hop-poultice may be used. If the abscess forms slowly it may be well to give a dose of the tincture of barks three, or four times a day. When it is ripe and is not inclined to break of itself, it may

be broken with the finger-nail, or by producing vomiting with wine of ipecac.; or it may be lanced. For the headache cold water is the chief remedy. Chloral may be used to allay irritability and produce sleep. Warm milk to which a few drops of carbolic acid have been added is a suitable gargle until the matter is discharged; and afterward one of a strong decoction of tea, in which a little alum is dissolved, is serviceable. The latter should be used for some time, in order to prevent, if possible, the tonsils from remaining enlarged for a long period. Throughout the attack, bland, nutritious drinks should constitute the food.

CATARRH OF THE STOMACH AND LIVER.

Catarrh of the stomach and liver, or gastro-hepatic catarrh, in its ordinary form, is commonly called A BILIOUS ATTACK; and if the head is much affected it usually goes by the name of A SICK-HEADACHE. ACUTE DYSPEPSIA is another and a not inappropriate title for it. It is not dangerous to life and generally subsides within two or three days.

In childhood this disease is *caused* for the most part either by eating indigestible food or exposure to cold and wet.

The *symptoms* of this disease are nausea, vomiting, pain about the stomach, feverishness, and a giddy, disagreeable feeling about the head. The tongue is heavily coated with a yellowish-white fur. There is no diarrhoea. The matter vomited contains bile; hence it is very bitter in taste and of a yellowish-green color.

The *treatment* of this disease should be to a great extent of a negative character; the patient should keep still, abstain entirely from food and take very little medicine. The stomach, liver and all the parts involved are in an excited, inflamed condition, and need rest. If there is any indigestible matter in the stomach and vomiting does not occur freely, an emetic of mustard is in order. A dose of magnesia may be

given, and a mustard-plaster placed over the stomach is of service. Lemonade may be used; but it is unwise to give much of it, or of any drink. Rarely is it proper to give stimulants. If there is great restlessness and pain chloral is the best remedy to use.

DYSPEPSIA.

Dyspepsia is the name usually given to a variety of morbid conditions which are seated mainly in the stomach. INDIGESTION is a synonym. I will limit my remarks to forms of it which are common in early life.

The *causes* of functional disturbances about the stomach are manifold. Whatever weakens the system in general weakens the digestive organs; and when these organs are in a weak state they are easily disordered. On the other hand, when the body is in a vigorous condition the action of the digestive organs is not readily perverted. Hence, all measures which favor health and strength also serve to prevent dyspepsia. The amount and character of the food and the mode of eating produce the trouble in the great majority of cases.

SURFEIT or the condition produced by overloading the stomach is not infrequently met with among children. Pain and weakness attend it. If the organ cannot free itself of its contents through its digestive power, it turns, and thus in time relieves itself. Evidently an emetic is the proper remedy for this form of dyspepsia.

ACIDITY or SOURNESS OF THE STOMACH is usually produced by the use of food which is digested with difficulty. A little of the aromatic spirits of ammonia or of any stimulant generally affords relief for the time being. Buttermilk, or lemonade, or any acid drink is sometimes the best remedy. By way of prevention of the trouble the tone of the system should be improved by the use of a tonic, such as tincture of barks, and articles not easy of digestion should be abstained from.

The form of dyspepsia called **HEARTBURN** or **CARDIALGIA** is a markedly acid condition of the stomach. It is due to the organ being in an irritable state. The presence of indigestible food, or of worms, often causes it. Aromatic spirits of ammonia, either alone or with paregoric, gives temporary relief. The return of the affection is to be prevented chiefly by invigorating the system and abstaining from such articles of diet as are not digested easily. Of course, if its occurrence be due to the presence of a worm, or worms, their removal is indicated; and it is generally in itself sufficient to at once effect a permanent cure.

WATER-BRASH or **PYROSIS** are names given to the discharge of clear, limpid liquor which occasionally comes from the stomach. This liquid is generally not acid. It originates in the glands which secrete the gastric juice; and it usually appears when the organ is empty. A poor diet is promotive of the occurrence of this discharge, and females are more subject to it than males. Before it begins a burning heat and a sense of constriction are experienced and a quantity of gas or wind comes up. The occurrence of the flow brings relief. A mixture of the aromatic spirits of ammonia and paregoric is a good remedy for it.

GASTRALGIA or **GASTRODYNIA** is pain of a nervous nature or neuralgia in the stomach. Debility tends greatly to produce it. It is often present in connection with the forms of dyspepsia spoken of above. At times it is very severe. Girls about the age of puberty are particularly apt to be affected with it. Firm pressure sometimes affords temporary relief from it. Occasionally the use of food stops it. A mixture of aromatic spirits of ammonia and paregoric is often beneficial. If the pain is great a mustard-plaster should be applied over the stomach. Chloral is the best remedy in very bad cases. Regulation of the diet and iron and other tonics are the preventives called for by it.

JAUNDICE.

Jaundice is a morbid yellowness of the skin, eyes and other parts of the body, due to the presence in the system of an excess of biliary matter. Another name for it is ICTERUS. It is scarcely in itself a disease; it is little more than a symptom. Cases of it are numerous. Extensive outbreaks of it occur occasionally. Many young infants suffer from it, and in them it is called ICTERUS NEONATORUM. Few deaths are caused by it. Only about a dozen minors succumb to it yearly in Philadelphia, and all are persons in their first year, infants.

As already stated, this discoloration is due to the presence in the system of an excess of biliary matter. The *cause* of this condition of things is mainly the absorption of an unnaturally large amount of bile. This takes place when the flow of the secretion is obstructed in its passage to the intestines, through extraordinary profusion of it, or catarrh of the ducts, or biliary concretions or gall stones, or perversion of the action of the intestinal absorbents. Inaction of the liver, and consequently the accumulation of the elements of the bile in the blood, may lead to the condition; and certain obscure changes in the blood itself may give rise to it. An attack of the affection may be brought on by mental excitement, or by exposure to cold. These, doubtless, are the exciting causes of most cases of it among the young.

The *symptoms* attendant on this condition may come on very suddenly; but this is not generally the case. For some time, usually, languor, loss of appetite, nausea and various indications of disorder about the liver and digestive track exist, before yellowness is anywhere observable. The latter may vary greatly in depth, and it may be replaced by a greenish, or a blackish hue. While the discoloration is present there is a bitter taste in the mouth, the *fæces* are of a leaden color, or lighter, and the urine is tinted like the skin. Rarely do objects appear yellowish. The spirits are generally depressed, and

there is an indisposition to exercise. The trouble does not often last longer than a week, or two.

As met with among the young, this affection seldom calls for any special *treatment*. A laxative may be given; and the use of lemonade throughout the attack is beneficial. If the yellowness seems to linger, a warm bath daily, or oftener, may hasten its disappearance.

DIARRHŒA.

Diarrhœa or loose discharges of frequent occurrence from the bowels is rather a symptom than a disease; but as it is often necessary to use remedies for it specially, it is proper to make a few remarks on it. Cases of it are very common, especially in the warmer half of the year. It is credited with the destruction of many lives. About a hundred and fifty deaths are imputed to it yearly in Philadelphia, and of them nearly a half are of persons under five years. Between the fifth and thirtieth year of age scarcely any die from it.

This affection is not ordinarily attended with much pain; and unless the discharge is very liquid and continues to occur at short periods for over twenty-four hours, it need not be a source of much alarm. The continuance of a profuse discharge, and severe pain for several days, may threaten life through exhaustion. It rarely, however, continues longer than a day, or so, unless it is caused by some serious morbid condition of the system, or by the use of unwholesome food. Debility favors the occurrence and prolongation of attacks of it.

It is only when it is prolonged and threatens to become dangerous that any case of this affection calls for special treatment. If the cause which produces it be not removed, serious consequences may follow if it is not allowed to continue to some extent. For it may be the means by which the body is freed from poisonous matter. This is the case when it is produced by a bad diet, or by typhoid fever.

For the first two, or three months of life, it is natural for about four evacuations of the bowels to occur daily; but this number is excessive in older children. Among the very young any diarrhœa which may exist will very generally be found to be intimately connected with the diet; and hence the regulation of the latter is curative of the trouble. Too much food is the cause of it in not a few cases, at least in infants. And here I may say that in weaning children abruptly the quality and amount of the milk and other food given must be carefully and intelligently attended to, or it will produce diarrhœa. Under such circumstances the affection is called WEANING-BRASH.

A mixture of lime-water and milk is an efficient remedy for many cases of diarrhœa occurring in early life. In connection with it let the diet be restricted, and consist of nutritious liquids.

When this affection arises from a temporary weakness of the bowels, aromatic spirits of ammonia, or brandy, or any other stimulant will check it. In addition to a stimulant, some spiced syrup of rhubarb is often very serviceable.

In marked cases of this disease a mixture of chalk-mixture and paregoric given in small doses at short intervals, in connection with a stimulant, will generally afford relief soon. Sometimes a mustard-plaster or some other counter-irritant may be applied to the abdomen with advantage.

CONSTIPATION.

Constipation is a condition of the bowels in which their contents tend to accumulate and become excessively dry. Rarely do serious consequences follow from it; but it may cause great discomfort; and it is inconsistent with health. It is not very common in early life.

This condition is almost always due to faults in the mode of living. A child, or any one that is allowed to exercise freely

and eat liberally of vegetable food, will seldom, if ever, suffer from it; and if there is a tendency to it, these are all the remedies which are required, as a rule. Through the use of fruit, vegetables, grits and milk, and liquid food generally, and the disuse of strong tea, fresh bread, and much meat of any kind, there should seldom be any difficulty experienced in preventing it.

A very young child should have three, or four passages by the bowels daily, and at any age it is well to have at least one. The habit of attending to this important matter, from day to day, at a fixed hour, is regulative in its influence, and should be cultivated.

The frequent use of laxative medicine of any kind is injurious, especially in early life; for it saps the natural powers of the system. As Dr. Bull remarks, "one of the greatest errors of the nursery is the frequent and indiscriminate exhibition, by the mother, or nurse, of purgative medicine." Nor is the habitual use of injections much less objectionable. If it is really necessary to use medicine at any time, castor oil, or magnesia, or senna-tea will answer. For infants a little olive oil may be used. For a very weak person an injection is preferable to medicine. The debilitated find tonics, such as wine of iron, or tincture of barks, of value; but these and all others should rely exclusively, or almost so, on the regulation of the diet and mode of life in general.

CHOLERA INFANTUM.

Cholera infantum is also called SUMMER COMPLAINT. These names are loosely applied to various affections in which the bowels are much relaxed, occurring in children under two, or three years of age, in the heat of summer; they are given to diarrhoea, inflammation of the stomach and bowels, and dysentery as well as the disease proper, which is a prostrated condition of the system attended with marked disturbance of the

digestive organs and other symptoms. But the true disease may spring from any of those named. However, it, or what passes for it, is the cause of an appalling number of deaths in most of our large cities and of some throughout the country, every year. It destroys, on the average, between nine and ten hundred lives every year, in Philadelphia.

This disease is induced very largely by heat. When the temperature of the air rises above ninety degrees at any time in the twenty-four hours, cases of it rapidly multiply. The deaths from it in Philadelphia occur mostly in July and August. The children of the poor, who live in tainted air, are by far the most likely to fall victims to it; still, it is very destructive to those who are deficient in vital force, no matter what the character of their surroundings may be. Weaning and dentition, in disturbing the system, favor it; consequently, it is more apt to occur in the second than the first summer of life.

The *symptoms* of this disease begin with heat about the head, languor, rejection of the food, vomiting, diarrhœa, and swelling of the abdomen. Sometimes there are convulsions. The discharges are thin and of a greenish color. Exhaustion and death may speedily take place; but in many cases the early symptoms abate, and life is extinguished gradually, through debility. Emaciation progresses very rapidly, and often becomes extremely marked.

The *treatment* of this disease is not apt to be successful unless it be begun early. Once the symptoms have set in well, it is hard to combat them. The first thing to do is to put the child in the coolest and airiest part of the house, and subdue the light. Then remove the clothing and apply tepid, or cool water until the temperature of the body is down almost to the normal degree. Afterward, give a mixture of spiced syrup of rhubarb and aromatic spirits of ammonia, in small doses often repeated. A little paregoric may be added. Place a mild

mustard-plaster over the stomach, and also one along the spine. Whenever the body tends to be excessively warm let it be well sponged, especially about the head. Milk containing lime-water is the only nourishment allowable until the stomach is well settled. As soon as it can be borne, beef-tea should be given. Brandy may be beneficial. In convalescence wine of iron is serviceable. The immediate removal of the patient to where the air is pure is highly advantageous. The chance of recovery is far better in the country than in the city.

The measures which should be taken *to prevent* cholera infantum may be inferred from what has been already said of the disease. The subject, however, is so highly important that I may say a few words specially about it.

As the summer approaches, attention should be given to the general health. See especially that the child has a sufficient supply of proper food, and that the air he breathes is pure. When the temperature reaches as high as eighty-five degrees at any time of the day, the leading consideration then is, to keep the body cool. A moderately cold bath should be given morning and evening, and on very warm days also at noon. The clothing should be light and loose. Let the child be kept in a shaded, airy place. In the morning and evening let him be taken out freely into the open air. Give him a liberal allowance of cold but not ice-cold water to drink.

CHOLERA MORBUS.

Cholera morbus receives also the names of SPORADIC CHOLERA, SUMMER CHOLERA and ENGLISH CHOLERA. It is very different from Asiatic cholera in nature. Cases of it are numerous; but comparatively few of them are in minors. It does not destroy many lives. Between forty and fifty deaths are imputed to it yearly in Philadelphia, nearly all of which are of persons over thirty years of age.

The *cause* of this disease is related to heat ; for cases of it are met with almost exclusively in very warm weather. Attacks of it can usually be traced to eating indigestible food, or drinking too freely of cold water, or a sudden chilling of the body, especially when in a feeble condition from exertion of any kind.

The chief *symptoms* of this disease are, nausea, vomiting, diarrhœa and colic. At the start there is usually considerable excitement of the system, but it may be said that there is never any fever. Marked thirst is common. The discharges generally contain much bile. If the attack is severe, coldness soon sets in, with painful cramps in the limbs as well as in the stomach and bowels. Recovery takes place as a rule within three days. When death occurs it is through exhaustion.

Prompt *treatment* is called for by this disease. A large mustard-plaster should be at once placed over the stomach, and kept there until it irritates well. A teaspoonful, or so, of a mixture of two parts of paregoric and one of aromatic spirits of ammonia should be given in a little water every fifteen minutes at first. Drink should be restricted. Pieces of ice may be dissolved in the mouth. Brandy, or whisky in small amount, often repeated, is useful if there is great prostration. Should there be much pain chloral is very serviceable. Sleep proves restorative. Food should be abstained from until the digestive organs become settled ; for indulging in it early will only prolong the illness.

DYSENTERY.

Dysentery or inflammation of the large intestine, particularly the rectum, is also called BLOODY FLUX. It is of a grave nature. About seventy-five deaths occur from it yearly in Philadelphia, of which over a third are of persons under five years. It is most fatal in infancy. Between the fifth and thirtieth year of age few die from it.

This disease is usually *caused* by errors of diet, or by exposure to cold and wet, when in a weak condition. The inhabitants of damp localities suffer most from it. The majority of cases of it occur in July and August. As ordinarily met with it is not contagious; but the reverse, probably, is true of it at times. At any rate, it occasionally prevails epidemically. The contagion, doubtless, is given off almost exclusively by the dejections; hence, they should always be disposed of speedily and in such a way that neither the air nor the water supply is likely to be contaminated by them.

The *symptoms* of this disease are, pain in the lower half of the abdomen, an almost constant desire to remove matter from the bowels, the passage of mucus and blood, constipation, nausea and feverishness. The straining is extremely painful. In some cases the bowel becomes ulcerated, and there is a tendency to exhaustion. Recovery generally occurs within ten days.

Chronic cases of this disease are not infrequently met with in some localities. In them the symptoms are similar to those of acute cases, but are less marked. Children are seldom affected thus.

The *treatment* of this disease may be begun by giving a sufficient dose of castor oil, or magnesia, or any other cathartic, to open the bowels freely. Then give wine of ipecac. in large doses every two hours, or oftener; and apply either a flaxseed-meal poultice or a mustard-plaster over the lower portion of the abdomen. Lemonade makes a suitable drink. If there is much restlessness a dose of the solution of morphia may be given at short intervals. The injection into the rectum of one, or two ounces of an infusion of flaxseed-meal, or gruel containing an ordinary dose of laudanum may be resorted to several times daily, to advantage. If there is but little tendency to exhaustion no stimulants should be given. The patient should stay in bed and keep still; for assuming the

erect posture, or moving irritates the parts that are diseased. Milk, beef-tea and other liquid nourishing articles of diet may be given from as early a period as the stomach will bear them.

COLIC.

Colic or pain in the abdomen is not in itself a disease; it is only a symptom. Being of very common occurrence a few words may fitly be said of it specially.

The presence of wind or gases which are apt to form when the digestive organs are deranged, is the ordinary *cause* of colic in early life; but it not infrequently springs from cramp or spasm, and inflammation. Wind causes pain by distending the vessel in which it is confined to an excessive degree; and cramp, or inflammation excites it here in the same manner as elsewhere. When produced by inflammation it is not of very temporary duration, and it cannot be shifted about through friction and pressure, as it can usually when due to wind. When it is caused by cramp it is very severe and comes at intervals.

To cure WIND-COLIC or FLATULENCE it is necessary to cure the morbid condition on which it depends; but it may be temporarily relieved by expelling the collection of gases. This can be done by kneading the abdomen gently. Stimulating agents such as mint-water, and essence of ginger, are often given for the purpose, and prove useful by toning up the parts; for debility not only favors the production of the wind, but also the distention of the parts which confine it. Aromatic spirits of ammonia serve the purpose, both through correcting acidity and stimulating the parts. A band placed around the body is useful when there is a tendency to this form of colic. Through the support it affords to the bowels it tends both to prevent the wind from forming and collecting.

For COLIC DEPENDENT ON CRAMP, paregoric, laudanum, or the solution of morphia may be used in connection with brandy, or some other stimulant; but in severe cases chloral is preferable to any of these. A mustard-plaster, or any hot application is of service. A dose of magnesia is generally indicated.

For COLIC DUE TO INFLAMMATION, either a poultice of flaxseed-meal or a mustard-plaster, or any warm application may be used in connection with the solution of morphia, or some other agent which will allay excitability and pain. But the precise nature of the inflammation should be at once determined, if possible, so that any special means of value for it may be resorted to early.

INTESTINAL WORMS.

The presence of worms of various kinds in the bowels is credited popularly with causing much disease of a wasting nature in early life. If a child has a precarious appetite and grows thin and irritable it is usually suspected at once that these parasites are at work. Now, it is, doubtless, true that they may reduce the system; but it is more than probable that they appear, in many cases, in consequence of the system being in a reduced state. This fact should be borne in mind in caring for children troubled with them.

Intestinal worms are of two kinds, the tape, and the round. I will speak of each separately.

TAPE-WORMS are of two species; but they resemble each other in the main. One (*tænia mediocanellata*) develops from larvæ or germs found mostly in beef and mutton, and the other (*tænia solium*) from larvæ found mostly in pork. The former may be over three times as large as the latter. It is sometimes over thirty feet in length and as thick as the little finger. Both are formed of flat segments, each of which measures from a quarter to half an inch in length, and

drops off either alone or with one, or more others ; and each of these segments when mature produces ova or eggs, which, when eaten by certain animals, grow into the larvæ (*eysticerei*) of diseased meat.

The small intestine is the part of the digestive track in which tape-worms take up their abode.

Rarely is there more than one tape-worm present in the body at any time.

All tape-worms come, perhaps, from the larvæ which are found in measly pork, and other meats which are consumed. A high heat is required to destroy these germs; and hence it is unwise to eat very rare meat.

The *symptoms* attendant on the presence of a tape-worm are, emaciation, lassitude, depression of spirits, nervousness, attacks of faintishness, disorder of the stomach, a tendency to diarrhœa, flatulence, uneasiness and pain in the abdomen, and itching of the nose and anus. Occasionally the nervous system is so greatly deranged that convulsions occur. But the only conclusive proof that there is a tape-worm present is the discovery of segments of it in the fæces.

There are numerous *remedies* for the removal of tape-worms. A purgative dose of the spirits of turpentine is as good, perhaps, as any other. Let from a teaspoonful to two tablespoonfuls of this agent be given in a little milk when the stomach is empty; and if necessary let the same amount of it be given again the next day. Care should be taken to see that the head comes away; for it is the most important part, being that from which the segments grow. In place of turpentine, pumpkin seeds may be given freely on an empty stomach.

Of **ROUND-WORMS** there are only two kinds of which I need speak, namely, the *lumbricoid* or *white*, and the *thread* or *seat*.

Lumbricoid worms are each from five to fifteen inches in

length, and taper to a point at either end. A number of them may be present at the same time ; and they usually inhabit the small intestine.

It is believed that the eggs from which these worms grow enter the body through water, or vegetables.

These worms are far more frequently met with than tape-worms.

The *symptoms* produced by these worms, when a number of them are present, are not essentially different from those attendant on the presence of a tape-worm. On discovering one of the worms in the fæces it may generally be taken for granted that there are more behind.

Of the *remedies* which are used for the expulsion of these worms, turpentine is as good as any. Let it be given as directed for tape-worm.

Thread-worms are each about an eighth of an inch in length. Great numbers of them may be present. They inhabit the rectum. Unlike the lumbricoid worms they multiply in the body.

The ova of the first couple, at least, of these worms enter the body in the same way, perhaps, as do those of lumbricoid worms.

Itching of the anus and restlessness are the chief *symptoms* attendant on the presence of these worms. Many of them come away from day to day in the fæces, and may be readily discovered.

The best *remedy* for these worms is an injection of turpentine and milk repeated daily while required. Lime-water may be used in place of turpentine, and in the same way.

CHAPTER X.

DISEASES OF THE AIR-PASSAGES.

*Preliminary Remarks — Coryza — Laryngitis — Bronchitis —
Pneumonia — Pleurisy.*

PRELIMINARY REMARKS.

In breathing, the air enters the nose, and passing through the windpipe, finds its way, by means of the bronchial tubes, into all parts of the LUNGS, which are organs in every respect similar to the lights of the lower animals, with which most people are familiar. The WINDPIPE or TRACHEA begins in the throat; and the first part or head of it is the LARYNX. Apart from the larynx, it is, in the adult, about four inches in length. It lies in front of the gullet. Within the chest it divides into two branches, the BRONCHI, one of which goes to either lung. Each bronchus divides and subdivides until the minute tubules terminate in the AIR-CELLS, which are bladders too small to be seen without the aid of a magnifying-glass. It has been estimated that there are in the two lungs about six million cells. The windpipe and the bronchial tubes are lined with a delicate membrane, and the air-cells by a still more delicate one.

The presence of air in the lungs is one of the essentials of life; and if the supply is not full and pure, health speedily suffers. It serves to remove effete matter from the system. The manner in which it acts has been spoken of elsewhere.

About thirty cubic inches of air are taken in by an adult, at each inspiration or breath; and as one breathes from fourteen to eighteen times per minute, the whole amount used per day is about three hundred and fifty cubic feet. The

capacity of the two lungs is about three hundred and forty cubic inches. Only about two-thirds of their contents, when fully inflated, can be voluntarily expelled. The amount which can be voluntarily expelled after inspiring to the fullest extent possible is called the vital capacity.

All diseases of the air-passages interfere more or less seriously with the functional action of the lungs; and this is the chief source of their fatality. Most of them cause difficulty in breathing (dyspnoea).

In the practical study of diseases of the air-passages great assistance is derivable from AUSCULTATION and PERCUSSION, and the LARYNGOSCOPE and other instruments. By auscultation is meant the observation of the character of the sounds which occur in any part; and by percussion or sounding, the production of sounds through tapping on a part with the ends of the fingers, or a substitute for them, and the observation of their pitch and other qualities. The laryngoscope is a small reflecting apparatus by means of which the larynx can be inspected.

Of the symptoms attendant on diseases of the air-passages I may say a few words about sneezing, hawking, and coughing. SNEEZING is produced by irritation of the lining membrane of the nasal passages. Irritation arising from the presence of phlegm, or any other substance in the larynx or throat causes HAWKING. COUGHING arises from irritation of the lining membrane of the bronchial tubes, or of the air-cells, produced generally by the presence of phlegm, or some other sort of matter in them. If it serves to remove an obstruction to the breath it is the reverse of harmful, as a rule; and this it usually does. It is only when it is purely nervous in origin that it is safe to stop it otherwise than through attention to its cause. Giving remedies to dull the sensibility for the purpose of stopping a cough which prevents the accumulation of phlegm in the

lungs is obviously a serious mistake. The materials which are removed by hawking, or coughing are called EXPECTORATION or SPUTA.

All the diseases of the air-passages which I will treat of are eminently preventible; no one must necessarily suffer from any of them. Their occurrence is attributable mainly to want of due attention to matters of hygiene. Proper regulation of the clothing aids greatly in preventing them; but it is of far less avail than living in such a way that the system is prepared to bear changes in the temperature of the air and disturbing impressions of all kinds.

It will be observed that all the diseases of the air-passages treated of below, namely coryza, laryngitis, bronchitis, pneumonia and pleurisy, are of an inflammatory nature. Hence, I may very appropriately make a few remarks here on INFLAMMATION. It is well observed by Celsus, in that important remnant of Roman medicine, his work, "De Medicina," that the four sure symptoms of this phenomenon are "redness and swelling, with heat and pain" ("*notæ vero inflammationis sunt quatuor, rubor et tumor, cum calore et dolore*"). Toward any tissue, or organ in which it is occurring, the blood flows in excess, and some of the thin portion or serum of it, and also a little of the solid portion passes out of the vessels and consequently redness and swelling result. High heat is caused by structural changes of a chemical nature. Exalted sensibility and the pressure on the nerves due to the swelling account for the pain; but pain may not be present, as is the case in pneumonia. When only serum of the blood has exuded it may be readily absorbed; but when solid constituents of it pass out of the vessels pus or matter will likely form. When the blood flows to a part in excess but does not find its way through the vessels CONGESTION is said to exist.

In treating cases of the diseases of the air-passages considered below it is important to attend to the condition of the

air of the sick-room. Of course, it should be kept as pure as possible. The temperature should be up to, or not far from seventy degrees; for if it be low it may irritate and increase the inflammation. Draughts should be carefully guarded against, as they chill the surface of the body, and thus force the blood toward the internal organs.

CORYZA.

Coryza is essentially a mild inflammatory condition of the membrane of the passages of the nose and of the throat, and upper part of the windpipe. Other names for it are CATARRH and A COLD. When the affection is confined chiefly to the nasal passages, it is commonly spoken of as "catarrh in the head," or "a cold in the head;" and when it is confined chiefly to the upper part of the windpipe and throat, it is spoken of as "catarrh in the throat," or "a cold in the throat." What is called "catarrh on the chest," or "a cold on the chest," is generally either bronchitis or pneumonia.

Coryza is usually *caused* by a sudden chilling of the body when heated. Exposure to cold, or draughts while perspiring freely, or wet is very productive of it.

The *symptoms* of this common affection are, doubtless, familiar to every one. In a severe attack they are chiefly languor, headache, feverishness, watering of the eyes, sneezing and a discharge from the nose, which is at first profuse, thin and burning; and if the windpipe is involved the voice is affected and there is a cough with some soreness about the chest. Recovery usually occurs within a week.

Through prompt *treatment* this affection may generally be cut short. As soon as it begins to appear, let a glass of hot lemonade, or of toddy be given in connection with a hot foot-bath; and then let the patient go immediately to bed and get into a state of perspiration as soon as possible. Wrapping the head in flannel, after rubbing the forehead,

nose and neck thoroughly with oil is very beneficial. A laxative is serviceable. If it is thought proper to resort to any other medicine, syrup of ipecae. and paregorie, either with or without the solution of the acetate of ammonia, may be given in small doses every three, or four hours. Bland drinks do good. Until convalescence sets in but little food is required, as a rule. In conclusion I may say that however slight this affection may be, it is never wise to neglect it, for it may develop into bronchitis, or some other serious disease.

LARYNGITIS.

Laryngitis is an inflammation of the larynx. It is a form of that indefinite illness, "SORE THROAT." When it is mild, and the whole throat is more or less involved, it is commonly called "catarrh in the throat," or "a cold in the throat." It is present to some extent in measles and various other diseases. Occasionally it is severe. About fifty deaths are imputed to it yearly in Philadelphia, of which over two-thirds are of persons under ten years of age.

This disease is *caused* very often by exposure to cold, or draughts when heated. Breathing hot air, or aerid vapors, or irritating particles of matter may produce it; and so may excessive coughing and the like. The feeble are most subject to it, and particularly those who keep the throat habitually over-warm.

The main *symptoms* of this disease in a fairly marked instance are, pain in breathing and in swallowing, hoarseness, a cough, feverishness, and headache. There is but little expectoration, especially at the start. The voice suffers in consequence of the cords or folds of tissue, by the vibration of which it is produced, being thickened or swollen. In severe cases there is dyspnoea; and it is mostly by it that death is caused. Recovery usually occurs within a week.

The *treatment* suitable for this disease is in general very

similar to that recommended for coryza. A warm, stimulating drink, a hot foot-bath, and wrapping the neck with flannel after rubbing it thoroughly with oil, are all the remedies necessary to cut it short in many cases. A laxative may be given; and syrup of ipecac. and paregoric, either with or without the acetate of ammonia, may be used in small doses every three, or four hours. If there is marked dyspnœa a large dose of ipecac. at short intervals is called for, with the application of mustard, or some other irritant to the neck in front. Bland drinks are useful. The food should all be liquid, and it is usually well to restrict it. The voice should be used as little as possible; for using it tends to make the hoarseness and other symptoms worse. If strangulation be threatened it may be advisable to open the windpipe. This operation, if performed skillfully, may often be the means of saving life.

BRONCHITIS.

Bronchitis or inflammation of the lining membrane of a portion or the whole of the bronchial tubes is a very common and often a fatal disease, especially in early life. About three hundred and seventy-five deaths are imputable to it yearly in Philadelphia, of which nearly a half are of persons under one year of age, and over two-thirds of persons under five years.

This disease is usually *caused* either by exposure to cold when heated, or by inhaling irritating dust. It is most apt to occur in the debilitated. Dressing over-warmly at times is a fruitful source of it. The unequal distribution of the clothing over the person induces it frequently among children. There is a marked tendency to it in measles, whooping-cough, typhoid fever and other diseases. As might be expected most cases of it are met with in the earlier months of the year, the temperature then being subject to sudden and great changes.

The *symptoms* of this disease vary greatly in their degree of severity in different cases ; both because the inflammation is not always equally marked, and because a different and an unequal portion of the bronchial tubes may be affected. At the beginning of an attack the system is depressed, but feverishness sets in, accompanied with a tight, sore feeling in the upper and front part of the chest, and a dry cough. The temperature seldom rises above a hundred and two degrees ; and if there is pronounced dyspnœa it may be lower than natural. The breathing is hurried and the pulse frequent and weak. The tongue is coated, and there is constipation. In two days, or so, from the start the cough becomes deeper and looser and there is more expectoration. It generally comes in spells and is often violent, on account of the difficulty experienced in removing the accumulations from the lungs. In bad cases the expectoration is at a late stage purulent in character. If only the larger tubes are involved the attack is usually what is commonly called “a cold on the chest ;” and recovery from it may be expected to occur within three or four days. When the weight of the disease is in the fine tubes there is great danger to life, and recovery seldom results within two weeks. The latter form of the disease is called capillary bronchitis. It is very common in children. Congestion of the substance of the lungs not infrequently attends it ; and it may run into pneumonia. In it there is a tendency to exhaustion ; and from the breathing being much interfered with, and consequently the aeration of the blood defective, the lips and other portions of the skin are, in severe cases, of a bluish tint. Sometimes the disturbance of the circulation leads to convulsions.

This disease may often be cut short through prompt *treatment*. As soon as the symptoms begin a warm bath, or a hot foot-bath may be given. Then let the chest be thoroughly rubbed with oil, and afterward be well covered with flannel.

Besides the rubbing, a mustard-plaster may be used. In connection with these local measures give a draught of hot lemonade, and also a brisk laxative. A large dose of either the syrup or the wine of ipecac. is serviceable. A little paregoric also will do good. If the disease continues the chest should be rubbed and irritated well, once or twice a day. A moderate dose of a mixture of ipecac. and paregoric may be given every four hours, or so. In place of ipecac. syrup of squills may be used at a late stage of the disease. Lemonade, or flaxseed tea, makes a desirable drink. In children it is mostly wise to use a little aromatic spirits of ammonia, or some other stimulant, from the start almost, particularly if the capillary form of the disease is present; and in any case if there is exhaustion, or inability to relieve the lungs of matter such an agent is called for. At the start, at least, it is proper to keep the air of the sick room moist. The food should be liquid and nourishing; and it is generally right to give it freely, except at first. In convalescence the tincture of barks, or wine of iron may be useful.

PNEUMONIA.

Pneumonia is an inflammation of the substance of a part, or the whole of either one, or both lungs. It is also called LUNG FEVER. The upper portion of either lung is seldom affected; and the lower portion of the right one is most apt to suffer. Even when limited in extent, it is a disease of a serious nature. About nine hundred deaths are caused by it yearly in Philadelphia, of which a sixth are of persons under one year of age, and over a third of persons under five years. This number is equal to about a twentieth of the total mortality. It has been estimated that one-half of the cases which occur in children under ten years prove fatal.

This disease is ordinarily *caused* by exposure to cold when heated. The abrupt and marked changes of temperature

which occur in the earlier months of the year are very productive of it. Sometimes it springs from breathing irritants, and occasionally from injuries, such as gunshot wounds. Lying long in one position, and thus favoring stagnation of the blood in the part may induce it in the feeble. Debilitated persons are most subject to it; and especially those who pass a great deal of their time within doors. Scrofulous children frequently suffer from it; and in them the mortality is heavy. There is a tendency to it in bronchitis, measles, typhoid fever and other diseases.

The usual initiatory *symptoms* of this disease are, depression of the system and a chill, followed soon by fever, soreness in the chest, oppression in breathing, and a short dry cough. Vomiting is common. Delirium appears early in some cases. In place of it, in young children, there are convulsions. By the third day, or so, expectoration begins to be profuse; and on examination it will generally be found to be thick and mixed with blood, of a rusty appearance. Such matter is characteristic of the disease. On the third, or fourth day the temperature of the body is usually very high; it is not unfrequently up to, or above a hundred and five degrees in the evening. The pulse is frequent, and at first full and strong, but later, small and feeble. The number of respirations per minute may be considerably over fifty. In favorable cases the heat and all the symptoms begin to subside in a week, or so. When the heat does not diminish about that period, and the difficulty in breathing and the prostration increase, the patient may be regarded as in a dangerous condition. Death seldom occurs within a week, and it may not happen within a month.

This disease has three stages. In the first the substance of the lung is congested but the air-cells are still to some extent free from matter; in the second it is inflamed, and as exuding matter fills the air-cells it becomes solidified; and in the third

it either becomes entirely disorganized and purulent, or the inflammation subsides, the matter present in it and in the air-cells disappearing by absorption and expectoration. On the subsidence of the inflammation depends, for the most part, the patient's chance of recovery.

This disease may be mistaken for others, particularly bronchitis. In bronchitis, when fairly developed, the temperature is not very high, the sound elicited by tapping on the chest-walls is very similar to what it is in health, on listening carefully the air is heard to enter fully into the lungs, the breathing is attended with wheezing, the cough is long and noisy, the expectoration is mucous, the skin and mouth are moist and there is fretfulness; while in this disease the temperature is high, the sound elicited by tapping on the chest-walls is dull, on listening the air is found not to enter fully into the lungs, the breathing is attended with little noise, the cough is short and feeble, the expectoration is rusty in appearance, and there is dejection of spirits.

By resorting early to suitable *treatment* this disease may sometimes be cut short. This should always be attempted; for even if the attack is not completely checked it is apt to be made less severe than it otherwise would be by the remedies used. The measures advised for bronchitis are also appropriate here. And the whole plan of treatment recommended for that disease is suitable for this one. Careful nursing is very important. As Dr. Bristowe says, "many, indeed, now regard all medicinal treatment as of little or no importance; and it is quite certain that a large number of even severe cases recover perfectly if left to Nature and the nurse." The same writer further remarks that in the majority of cases "it is probably quite sufficient to keep the patient in bed in a comfortable, well-ventilated room, of medium temperature, to relieve thoracic pains with mustard-plasters and the like; to assuage febrile thirst by the exhibition of soda-water,

orangeade, or lemonade ; to support strength by the frequent administration of milk, or gruel, or some equivalent nutritious fluid ; and to relieve from time to time by simple measures, diarrhœa, or constipation, and other remedial derangements of the various organs ; and then as convalescence comes on, to give vegetable tonics and gradually to improve the diet in respect of both quantity and quality."

PLEURISY.

On the inner surface of the chest-walls and reflected over the lung, on either side, there exists a delicate membrane. This membrane forms two distinct pouches which join each other laterally in the middle line of the body. It is called the pleura ; and inflammation of a portion, or the whole of it constitutes pleurisy. This disease is not of infrequent occurrence ; but it seldom proves fatal. About a score of deaths are imputed to it annually in Philadelphia, of which only two, or three are of minors.

This disease may be *caused* by exposure to cold, or draughts when heated, or blows on the chest, or a fracture of the ribs, or extension of tuberculous degeneration, and other diseases of the lungs. In scarlet fever and some other blood affections there is a tendency to it.

The *symptoms* of this disease are very slight, if only a small portion of the pleura is affected, which is often the case. When most, or the whole of the membrane on one side is involved, they begin with a chill, which is soon followed by a sharp pain in the lower part of the chest, toward the front, or, as it is usually called, "a stitch in the side," which is increased by breathing deeply, fever and a short, dry cough. In most cases these and all other symptoms abate about the third day, or so ; but sometimes a quantity of serum collects in the pleural cavity ; and it may become purulent and remain present for a long period. If there is much of an effusion

the lung is pressed upon, and consequently breathing may be impeded to a serious degree. Through adhesions, marked deformity may, in time, be produced, and occasionally the lung is rendered almost useless for life.

The *treatment* of this disease should be prompt, so that effusions may be prevented from occurring. It may be begun by giving a warm-bath, or a hot foot-bath. Then let a mustard-plaster be applied to the side, and a brisk cathartic be administered. A mixture of syrup of ipecac. and paregoric may be given in moderate doses every two, or three hours. Lemonade makes a suitable drink. A band, or strips of adhesive plaster applied in such a way as to keep the affected side comparatively still will do good. Should the effusion occur, the repeated use of counter-irritants is beneficial; and tonics and nutritious food hasten its disappearance. Syrup of squills and other agents which stimulate the action of the kidneys and skin may sometimes be used to advantage; and the same is true of laxatives. Should the breathing be seriously interfered with by the collection of matter, tapping may be resorted to; but this operation should not be undertaken by any one save a skillful physician.

CHAPTER XI.

DISEASES OF THE BLOOD-VESSEL SYSTEM.

Preliminary Remarks—Palpitation of the Heart—Fainting or Syncope.

PRELIMINARY REMARKS.

Until the year 1619 but little was known of the mechanism and uses of the blood-vessel system. Then it was that the circulation of the blood was demonstrated to the world. This important work was done by an English physician, Dr. William Harvey, who was born in 1578 and died 1657. For his pains he had to bear for years the displeasure of both his professional brethren and the public. And yet it is clear that the fact was at least vaguely understood long before. Thus Plato says, "The heart is the knot or centre of the blood-vessels, the spring or fountain of the blood, which is carried impetuously around. The blood is the pabulum or food of the flesh. And for the purposes of nourishment the body is laid out into canals like those which are drawn through gardens, that the blood may be conveyed as from a fountain to every part of the person's body."

As is now well known to every one possessed of an ordinary degree of intelligence, the constant circulation of the blood throughout the body is one of the essential conditions of life. For this purpose there exists a complex system of pipes in connection with the heart, which acts to some extent like a forcing-pump. The pipes by which the blood is carried away from the heart are called ARTERIES; and those by which it is carried to the heart are called VEINS. In the tissues the tubes form an extremely fine network, and are so minute that it is

impossible to distinguish them without the assistance of a microscope. These little avenues are called *CAPILLARIES*; and it is through the walls of them alone that any part of the blood can pass. It has been estimated that a continuous line formed of those in the lungs would measure over five thousand miles.

All the arteries originate from one (the aorta) and divide and subdivide until they ultimately terminate in the capillaries; the capillaries unite to form veins; and the veins unite as they pass along, so that there are only two (the superior cava and the inferior cava) when the heart is reached.

The *HEART* is about the size of the fist; and it consists mainly of muscular fibres, spirally arranged. A membrane (the pericardium) ensheaths it; and it is suspended between the lungs by means of the vessels which join, and which spring from its base. It consists of two distinct parts, each of which contains two cavities or chambers, and at the point of exit of each chamber there are little projecting membranes called valves, which when stretched, make a complete partition.

In its course the blood passes from the two veins, the superior and the inferior cava, into the upper chamber on the right side of the heart (the right auricle), from which it is forced into the one beneath (the right ventricle); and from there in turn through a large vessel (the pulmonary artery) into the lungs, where it is purified by the air. From the lungs it passes by four vessels (the pulmonary veins) into the upper chamber on the left side of the heart (the left auricle), from which it is forced into the one beneath (the left ventricle); and from there in turn into the main artery (the aorta), to be distributed all over the body. While the two upper chambers (the auricles) are dilating, and consequently being filled with blood, the two beneath (the ventricles) are contracting, and consequently being emptied.

At each contraction of the two lower chambers or ventricles the apex of the heart is tilted forward and produces what is called a beat; and besides, an impulse or vibration is caused in all the arteries by the fresh current of blood. This impulse constitutes the PULSE.

About three ounces of blood passes into the aorta of an adult at each beat of the heart; and hence all that is in the body goes through it in a little less than a minute.

The heart does not beat an equal number of times per minute at all periods of life; and it is generally more frequent in females than males. In the first year it beats from a hundred and fifteen to a hundred and twenty times per minute; in the second, from a hundred to a hundred and fifteen times; in the third, from ninety to a hundred times; in the seventh, from eighty-five to ninety times; in the fourteenth, from seventy-five to eighty-five times; in middle life, from sixty-five to seventy-five times; and in advanced life, from fifty-five to sixty-five times. It beats more frequently when the person is in the erect than when in the recumbent posture; and it is liable to be greatly disturbed by disease.

A careful examination of the character of the pulse throws much light on the state of the system at any time. It is usually felt at the wrist. In studying it the chief points to be noted are, its frequency, fullness and force, and whether or not it is variable or irregular. Great frequency of it generally indicates the presence of fever, or inflammation, or debility, or nervous excitement; and marked slowness is usually caused by nervous prostration. When it is very full and at the same time yields easily under the pressure of the finger, the system is feeble; and when it is full and hard there is apt to be active inflammation progressing in some part of the body. If it be very forcible, it points to active fever, or to inflammation, or enlargement of the heart; and marked feebleness of it springs from debility, or exhaustion. When it tends to

vary greatly in frequency, fullness and force, the nervous system is in an irritable, easily disturbed condition. Irregularity or temporary halting of it usually indicates weakness about the heart in connection with nervous debility and sometimes mental disturbance.

Diseases of the blood-vessel system of a serious nature are of comparatively rare occurrence in early life. Of the over eight hundred deaths imputed to them annually in Philadelphia only about a hundred are of persons under fifteen years of age. Palpitation of the heart and fainting are the only affections of which I will speak.

PALPITATION OF THE HEART.

Palpitation or excessive beating of the heart is not properly speaking a disease; it is only a symptom. Many suffer from it at times. On its cause depends both its significance and curability.

When not *caused* by fever, or inflammation, or some other temporary disturbance of the system, this affection is generally due in early life to nervous debility. Among the young it is rarely produced by impairment of the valves of the heart; but when it is, the import of it is serious. The use of strong tea and coffee, and tobacco and alcoholic liquors is accountable for it in many instances. All habits that are prejudicial to health favor the development of it.

To *cure* this affection in any case it is first necessary to remove the cause on which it depends. If it be due to bad habits their discontinuance will prove curative. A hygienic mode of life should always be followed as closely as possible. Exercise, good food, and all measures which invigorate the system are mostly in order. Tincture of barks, or wine of iron may be serviceable. For the production of temporary relief bromide of potassium, given in moderately large doses, several times daily, for a while, is often a good remedy.

FAINTING OR SYNCOPE.

Fainting or syncope is also called swooning; and it is rather a symptom than a disease. It may be defined as either partial or total loss of consciousness and motion for a few minutes at a time. In nature, it is a manifestation of marked enfeeblement of the functional activity of the heart; but the condition of this organ is generally only a consequence of nervous derangement. It rarely proves fatal.

This affection is *caused* mostly by fear, joy, loss of blood, pain, or exertion when weak. A nervous temperament, debility, anæmia and structural disease of the heart are favorable to its occurrence. Females suffer from it far more than males.

As the energy of the heart is not blighted, or overpowered to the same degree in every case, the symptoms of this affection are not always equally pronounced. If consciousness is not completely lost there is faintishness merely; in which state the patient is pale, feels giddy, and his sight and other senses are confused and benumbed. When unconsciousness occurs the patient sinks to the ground and remains motionless; and as the heart and lungs cease almost to act, there is scarcely any evidence of life perceptible. In returning to consciousness, faintishness passes off gradually. The duration of the attack varies from a few seconds to several minutes.

The *treatment* called for by this affection is simple; but it should be prompt; for in a prolonged attack there is some danger of clots forming in the blood—a fatal contingency. The recumbent posture is the most favorable to recovery from it in all its degrees. If tight, the dress should be loosened, in order to favor the action of the heart and lungs. Plenty of fresh air is very beneficial. A little cold water should be dashed in the face and chest repeatedly; for it serves to arouse energy. Breathing the vapor of ammonia also excites functional action; and a mustard-plaster applied to the spine, or the pit of the stomach, has a similar effect.

CHAPTER XII.

DISEASES OF THE NERVOUS SYSTEM.

Preliminary Remarks—Convulsions—Epilepsy—Chorea—Paralysis—Inflammation of the Brain—Headache.

PRELIMINARY REMARKS.

The nervous system may be described as consisting of the brain, the spinal cord, and the nerves; but these parts are intimately related to one another.

The BRAIN of an adult of either sex is equal to about a thirty-fifth of the entire body in weight. In infancy the proportion is about a twentieth. It is of a pulpy consistency in early life; and afterward it is as firm as newly-pressed cheese. In structure it is very complex. It rests within the skull; and from it run the spinal cord and also a dozen pairs of large nerves which are distributed to the organs of the special senses—seeing, hearing, smelling, and tasting—and to the heart, lungs, and digestive apparatus.

The SPINAL CORD is about an ounce and a half in weight, in the adult. It traverses the backbone; and in passing down it gives off at intervals of half an inch, or so, a nerve to either side, or thirty-two pairs in all. These nerves are distributed to the muscles and skin.

A NERVE consists of from one to an immense multitude of threads or filaments; and hence it may vary greatly in thickness. The large trunks divide and subdivide as they pass along. The filaments are of two kinds, one of which carries in and the other carries out impulses. Those which carry impulses toward the brain are subservient to sensation, and those which carry impulses from the nerve-centres are subservient to motion.

Besides the nerves which spring from the brain and spinal cord there is a network of others of minute proportions, the SYMPATHETIC SYSTEM. In function this system is entirely independent of the will; and it exercises a controlling influence over the blood-vessels and other parts connected with nutrition.

Within the brain and spinal cord originates the FORCE, which on being conveyed through the nerves, regulates the movements of all parts of the body. In nature, this force is doubtless somewhat similar to electricity; but, at any rate, it is of an extremely subtile character. Over it the mind exercises a guiding power.

On the condition of the nervous system depends the well-being of the structure and function of every other part of the body. If it be very highly developed in proportion to the other parts, the person is very sensitive to impressions of all kinds, and is said to be of a nervous temperament. Such a person is very liable to suffer from nervous diseases; and, in fact, the disproportionate development may be justly regarded as being in itself a disease.

Diseases of the nervous system are extremely common; and about a seventh more males than females succumb to them. From twenty-five hundred to three thousand lives are destroyed by them every year in Philadelphia. This is about a seventh of the total mortality. Of the deaths imputable to them, a third are of persons in their first year, and a half are of persons under five years of age. But a morbid condition of the nervous system is also accountable for a considerable percentage of the deaths from many other diseases.

In treating nervous diseases efforts should be made to get the structure and function of the apparatus in which they are seated into a healthy state. In all cases the mode of life should be carefully regulated. A good diet, pure air and hygienic measures in general are the remedies on which

reliance should almost always be chiefly placed. But medicine may be temporarily, at least, of great value.

CONVULSIONS.

Convulsions are often called SPASMS. If only a small portion of the body is affected, and pain is experienced, they usually receive the name of CRAMPS. They are symptoms of nervous derangement of some kind, and are of very frequent occurrence. To them may be imputed the destruction of many lives. Between eight and nine hundred deaths are attributed to them yearly in Philadelphia, of which five-sevenths are of persons in their first year, and seven-eighths are of persons under five years of age.

The exciting *causes* of convulsions are manifold; but their occurrence is always due to a morbid condition of the brain, or of the spinal cord, or a disorder of the blood, or mental disturbance, or local irritation. In early life they are mostly due to the irritation of the gums attendant on dentition, or indigestion, or constipation, or intestinal worms, or to fright, or the presence of scarlet fever, or some other serious disease. Those of a nervous temperament are particularly liable to be affected with them; for in such persons it is easy to produce the degree of functional excitement in the nerve centres required to produce them. A scrofulous condition of the system is favorable to their occurrence.

In children, at least, there are generally some *symptoms* premonitory of an attack of convulsions. The person about to suffer is apt to be very restless and fretful. When present, the features are distorted, the body is rigid at first and moves twitchingly later, the head is thrown back, and sometimes the limbs are forcibly flexed and extended. But often there is only a part of the body involved. In all severe cases consciousness is totally absent, and consequently no pain is experienced. After the fit begins, the pulse grows small and

frequent, and the skin becomes moist and somewhat cold. An attack is generally less than five minutes in duration, and seldom causes death. On recovery the patient may act as if nothing had happened, but he usually feels weary and sleepy.

In *treating* convulsions it should be borne in mind that they will tend to return while, at least, their exciting cause remains; hence it should be carefully looked for at once, and be removed if possible. Thus, if there is much irritation about the gums, due to dentition, the lancet should be used immediately; if the stomach is loaded with indigestible food, vomiting should be produced; if there is constipation a laxative should be given; if there is a high fever it should be reduced through the application of water; and so on. To allay excitability cold should be applied freely to the head. Sometimes a mustard-plaster may be applied along the spine to advantage. If the attacks are inclined to return very frequently chloral, or laudanum, or some other narcotic is serviceable. Unless as a temporary remedy, the bromide of potassium is, perhaps, the best medicine to use. While an attack is occurring the patient's movements should not be restrained much, either by his clothing or the hands of his attendant. A little water may be dashed over the face and chest; and ammonia may be used as an inhalant. A warm-bath is a very efficient means of cutting it short.

EPILEPSY.

Epilepsy or FALLING SICKNESS are names given to convulsions which are attended with loss of consciousness, and which occur from time to time. This affection varies greatly in severity; and it manifests itself mostly between the tenth and twentieth year of age. It is not uncommon; but it does not often prove fatal. There are about thirty-six deaths imputed to it yearly in Philadelphia, of which a third are of minors.

The *cause* of this affection is generally obscure. For the

most part it is attributable to a vice in the system, either inherited or acquired. Blows on the head may be accountable for it. Fright, intestinal worms, or anything which disturbs, or reduces the nervous system may, perhaps, lead to it. In other days it was referred by many to supernatural influences. Hence it was commonly called the SACRED DISEASE by the ancient Greeks and others. And indeed, there is something very striking about it. But in his account of it, Hippocrates wisely observes, "It appears to me to be nowise divine, nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine, from ignorance and wonder."

The *symptoms* of a pronounced attack of this affection do not differ essentially from those of severe casual convulsions. Before the occurrence of it there may be headache, giddiness, terror, and an aura or creeping sensation which begins in a hand, or foot, and advances toward the trunk ; but in a large percentage of cases it comes on unexpectedly. Grinding of the teeth and foaming at the mouth are common symptoms. The tongue is apt to be bitten. Sometimes there is vomiting and the breathing is often very laborious. The duration of an attack varies from a few seconds to ten minutes, or so, but it is on the average, about five minutes. When momentary the patient may not fall nor be convulsed. The interval between the attacks may vary from a few minutes to many months. In some there is great mental excitement after being affected, but usually there is a drowsy feeling. Sooner or later the intellect suffers, particularly in females. Occasionally insanity results.

The *treatment* of this affection is not often satisfactory. Complete recovery from it when it is inherited, or has been suffered from for a long time, is of rare occurrence ; but it seldom destroys life soon. If the patient is very young and the attacks are not frequent there is always some room for

hope. During an attack the clothing of the patient should be loosened, the presence of a plentiful supply of fresh air should be insured, and a little cold water may be dashed on the face and chest. If prolonged, a mustard-plaster may be applied to the spine. Ammonia may be used as an inhalant. An object may be placed between the teeth to save the tongue from being bitten. Restraint beyond what is necessary to prevent self-injury is harmful, and hence, should not be practiced. When the approach of an attack is recognized it may sometimes be averted by breathing hurriedly for a few minutes, or inhaling ammonia, or applying a band tightly around the limb in which an aura is felt, or producing in any way a profound impression on the system. Chloral may be resorted to as a temporary preventive. Through the use of bromide of potassium for a while, in large doses, three times a day, the attacks may often be lessened in frequency. Nearly all the so-called remedies for the disease are more injurious than beneficial. Permanent relief must be sought for almost exclusively in measures which improve the general condition of the system. Habits of an injurious nature must be discontinued, and the whole method of living should be as hygienic as possible. All sources of mental irritation should be carefully avoided. A moderate amount of study is, as a rule, advantageous. Marked modifications in the constitution, brought about by time, or a difference in the regimen or surroundings, may prove curative. Hippocrates was well aware of the good attendant on them; for in his "Aphorisms" he says, "Epilepsy in young persons is most frequently removed by changes of age, of country and of mode of life."

As an epileptic is liable to suffer at any time, of course, he should not expose himself where, if attacked, he might be badly, or fatally injured, or undertake any labor, or duty, in the performance of which the occurrence of an attack might be followed by serious consequences to himself, or others.

CHOREA.

Chorea or more or less incessant, irregular movements of any, or all parts of the body which in health are subject to the will is commonly called ST. VITUS'S DANCE. It is of frequent occurrence, but very rarely proves fatal. Between the fifth and fifteenth year is the period of life in which it is particularly apt to appear.

Feeble, nervous persons are most subject to this affection; and females suffer from it more frequently than males; but its exciting *cause* is seldom obvious. Fright, mental excitement, over-fatigue, or blows on the head may induce it. An attack of rheumatism is often followed by it. Sometimes it is contracted through voluntary, or involuntary imitation of the movements of one affected with it. This is, doubtless, the way in which the epidemics of it which occur occasionally in schools are produced.

The *symptoms* of this affection generally develop gradually. For a while the patient is fidgety, moves awkwardly, makes grimaces, and involuntarily drops things occasionally. Marked irregular movements usually begin in the face, a hand, or a leg. One side of the body mostly suffers more than the other; and except when it arises after an attack of rheumatism it rarely begins in both simultaneously. The twitching may be so slight as to be scarcely noticeable, or so great that the patient is unable to walk with safety. It is less pronounced when sitting than when standing; and a strong effort of the will can control it temporarily. While sleeping it is absent. An attempt to perform any voluntary movement aggravates it; and so does the consciousness of being watched, or mental disturbance. It renders both speaking and swallowing difficult in many cases. The general health is usually impaired. Besides languor and loss of appetite, debility, anæmia, indigestion, constipation and palpitation of the heart are often present. The mental faculties are generally weakened, or

disturbed, and may sustain injuries of a permanent character. It may lead to epilepsy, or paralysis, or insanity. Recovery may take place in a week, or two; but in some cases it is delayed for two, or three years, or longer.

In *treating* this affection, invigoration of the system is the means on which reliance should be chiefly placed. Plenty of exercise in the open air, and an abundance of nourishing food are the main remedies for it. Let the whole mode of life be so regulated as to be promotive of health and strength of both body and mind. Wine of iron and other tonics may be useful, especially if the patient is disinclined to eat freely; but medicine, as a whole, is seldom of much value. Bromide of potassium may be given in moderate doses, three times daily, in severe cases.

PARALYSIS.

Paralysis or PALSY are names given to either partial or complete loss of motion, or sensation, or of both, in any part of the body. It is a symptom of injuries, or of diseases of the nerves, or the great nerve-centres—the brain and the spinal cord. Cases of it are not nearly so common in early life as later. Of the three hundred deaths imputed to it yearly in Philadelphia only about a score are of minors.

I will make a few remarks on the *cause*, special *symptoms*, *treatment*, and other features of each of several forms of this condition which are often met with.

HEMIPLEGIA is paralysis of one side of the body. It springs mostly from an injury, or disease of the brain; and the lesion is on the opposite side. In after life it is commonly due to the effusion of blood consequent on the breakage of a blood vessel (apoplexy). Among the young it may come from blows, or the like, or may occur in connection with epilepsy, chorea, or some other disease. When due to a serious lesion of the brain the prospect of recovery is not good. Be-

yond attention to the general health but little can be done for it.

PARAPLEGIA is paralysis of the two lower extremities. It springs from an injury, or disease of the spinal cord ; but the brain may be implicated in its production. It is usually not dangerous to life. The prospect of recovery from it depends on the nature of its cause ; and such measures as will remove the latter prove curative of it.

FACIAL PARALYSIS or paralysis of one side of the face is generally due to an injury, or a diseased condition of the nerve which supplies that region. An inflammation of the sheath of the nerve at the point where it issues from the cranium, namely, beneath the root of the ear, is the usual exciting cause of it. It nearly always passes away within a few weeks at most. The repeated application of mustard, or a blister behind the ear is usually curative of it.

INFANTILE PARALYSIS is the name given to what is generally a sort of paraplegia, which is occasionally met with. It appears oftenest in the second year of age. Disease of an inflammatory nature in the spinal cord appears to be the exciting cause of it. While it is coming there is more or less fever, and sometimes convulsions occur. Sensation is not much affected, as a rule. The muscles involved waste rapidly, or become loaded with fat. Recovery may occur in a few days ; but this is rarely the case. The parts affected are not inclined to grow, and deformities are prone to arise.

By way of treatment of this disease everything possible should be done from the start to improve the tone and vigor of the system. Nourishing food, pure air, exercise, and all that can be brought to bear to improve the health and strength are the means of cure in which confidence should be chiefly placed. At first a cathartic should be given ; and it may be repeated in a day, or two. The spine should be irritated occasionally with mustard. The use of iron may do good.

Motion of the affected parts must be made by the attendant. Kneading or massage is beneficial, and it should be practiced two, or three times a day. Heat may be of service, and so may electricity. On the appearance of club-foot, or any other deformity, preventive measures should be instituted immediately.

INFLAMMATION OF THE BRAIN.

Inflammation may affect a part, or the whole of the brain and its membranes; but the limits of it cannot often be determined. In its first stage, or when it is mild, it may be called CONGESTION OF THE BRAIN. If the spinal cord is involved the condition generally receives the name of CEREBRO-SPINAL MENINGITIS—a name which is also given to an acute blood disease (spotted fever) which prevails occasionally as an epidemic. These inflammatory conditions are accountable for the destruction of many lives. From seven to eight hundred deaths are imputed to them yearly in Philadelphia, of which a third are of persons in their first year, and nearly three-fourths are of persons under five years of age. More males than females die from them.

Inflammation of the brain, or of the brain and spinal cord may be *caused* by injury, exposure to the sun, the extension of disease from the ear, a fever, or in various other ways. The occurrence of it, however, in early life is mainly due to the presence of a scrofulous taint in the system.

The *symptoms* of inflammation of the brain commonly set in gradually. Before congestion fairly begins the patient is dull, irritable, restless at night, and disinclined to eat. In a few days the symptoms are, severe headache, nausea, feverishness, a full, rapid pulse, marked sensitiveness to light and sound, a flushed, anxious expression, drowsiness, complaining and screaming spells, and delirium at night. As the disease advances the pulse becomes weak and the system enfeebled.

Squinting, convulsions, paralysis, hydrocephalus, or stupor, may appear soon. If the spinal cord is much affected there is a tendency to throw the head and chest back. When the occurrence of this disease is mainly due to a constitutional taint it nearly always proves fatal; otherwise there is a fair prospect of recovery. Death takes place usually in from one to three weeks.

In order to be of much avail in most cases the *treatment* of this disease must be begun early. Let the bowels be opened well with citrate of magnesia, or some other cathartic, and be kept loose. A mustard-plaster may be applied repeatedly to the nape of the neck, and to the spine if the latter is affected. The application of tepid, or cold water freely and frequently, or continuously, is beneficial. Morphia may be used to quiet the system. If the disease is very active and the patient robust the diet should be restricted and of non-stimulating articles; but in scrofulous children it is usually proper from the start to give milk, gruel, beef-tea, and other nutritious foods as liberally as they can be borne by the stomach.

HEADACHE.

Headache is a prominent symptom of numerous morbid conditions of the system. Either a part or the whole of the head may be more or less affected. In its character and degree of severity it varies greatly.

Congestion, or anæmia of the brain, a disordered condition of the blood, and nervous derangement, are each accountable for a particular form of this affection. On the exciting *causes*, the special *symptoms*, the *treatment* and other features of each of these four species of it I will make a few remarks.

HEADACHE DUE TO CONGESTION OF THE BRAIN may be produced in many ways. It may be due simply to excessive fullness of habit; but it generally arises from fever, inflammation in some part of the body, exposure to the sun, stoop-

ing, diseases of the heart, mental excitement, anxiety, or over study. It is diffused over the whole head, and is attended with heat and throbbing. The application of cold gives temporary relief. A permanent cure can be effected only through the discontinuance of the cause.

HEADACHE DUE TO ANEMIA OF THE BRAIN is not very common. An impoverished condition of the blood excites it. It is felt principally in the back of the head, and may be very severe. Wine of iron, in connection with plenty of good food and a hygienic mode of life will cure it.

HEADACHE DUE TO A DISORDERED CONDITION OF THE BLOOD is of frequent occurrence. It is felt most in the front portion of the head, and is of a dull, oppressive character. It arises generally from constipation and other affections of the digestive organs, or from breathing impure air. Acute blood diseases tend to produce it, as well as congestive headache. A laxative is the remedy which is oftenest indicated.

HEADACHE DUE TO NERVOUS DERANGEMENT is not very common among the young. It is seated in the nerves; and it is of a darting, inconstant character. It generally affects only a part of the head. The application of irritants where it occurs may do good. If very severe, morphia, or chloral may be used in large doses for a time. Permanent relief from it can usually be gained only through improvement of the tone and vigor of the system.

CHAPTER XIII.

DISEASES OF THE SKIN.

Preliminary Remarks—Inflammatory Eruptions—Papular Eruptions—Vesicular Eruptions—Pustular Eruptions—Tubercular Eruptions—Squamous Eruptions—Parasitic Eruptions—Poison-Eruptions—Discolorations of the Skin—Growths of the Skin.

PRELIMINARY REMARKS.

The skin is very liable to become disordered. The diseases of it are numerous and most of them are inclined to be more or less chronic; but fortunately few of them are at all dangerous to life. There is not one of them, however, which is not annoying to the patient; and consequently all of them deserve attention. A knowledge of their nature, and the means by which they can be relieved, or removed, is very useful to those in charge of the young; for domestic treatment is all that the majority of them usually receive. I will, therefore, endeavor to make my account of them as clear and practical as possible. This is a difficult task; but I trust my remarks will serve to give my readers a better understanding of the subject than many of them, at least, have hitherto had.

The skin is spread over, of course, the whole surface of the body. The average thickness of it is about a quarter of a line. In structure it is complex. Two layers are readily discovered in it, the inner of which is called the dermis, or the true skin, and the outer, the epidermis, or the scarf-skin.

The DERMIS varies in thickness in different parts, from a sixth of a line to one and a half lines, and is divisible into two layers, the inner of which consists of fibrous, elastic

material, and rests on cellular and fatty tissues—the packing elements of the body, and the outer, of conical projections called *papillæ*, each of which is about a hundredth of an inch in height and a two hundred and fiftieth of an inch in diameter at the base. These little elevations are easily seen in parallel ridges on the palm of the hand. One, or more loops of the capillaries, and one, or more nerve fibres are present in each.

The EPIDERMIS varies in thickness, in different parts, from a sixtieth to a tenth of a line; but it is sometimes greatly thickened, especially on the palms of the hands and the soles of the feet. It is made up of cells and is without nerves as well as blood-vessels, and hence it is void of sensibility. It is divisible into two layers, the inner of which is called the *rete mucosum*, and the outer the *cuticle*. In the *rete mucosum* is located the matter upon which the color of the negro and the various shades of complexion of all other races depend. The cuticle is constantly shedding, in the form of *dandruff*.

In the inner layer of the dermis are situated the follicles of the hair and the sebaceous glands. In immediate contact with its inner surface are the perspiratory glands.

The SEBACEOUS GLANDS consist each of a little pouch, and are situated about the hair follicles. From two to eight of them are clustered around the root of each hair and have a common outlet. The matter secreted by them is oily; and besides lubricating the hair, it renders the skin repellant of moisture. An excessive flow of it constitutes the disease called *seborrhœa*; marked scantiness of it, *zeroderma*; and an accumulation of it, either *comedo* or *milium*—the former when the outlet is open, the latter when it is closed.

The PERSPIRATORY GLANDS consist each of a coiled tube of about a fifteenth of an inch in length, and a four-hundredth of an inch in diameter. The whole length of all in the body has been estimated to be two and a half miles. Each rises

spirally to the surface of the skin, in every square inch of which there are, on the average, about a thousand. They are constantly in action. Their secretion usually passes off without being perceived; but some of it may accumulate on the skin, and that which does is called sensible perspiration or sweat. When the body is warmer than usual, and under other circumstances, they act very freely. Morbid activity of them constitutes the disease called hyperidrosis. This condition is often observable in the hands and feet of debilitated persons. When the perspiration is foetid the affection called bromidrosis is said to be present. Little clear vesicles which are often observable on the hands and face in warm weather, are accumulations of perspiration and are called sudamina.

From what precedes it is evident that the skin is not, as is popularly believed, a mere covering for the body. It is really a great excretory organ. Through the action of the glands which it contains it carries off carbonic acid and other deleterious matter, and regulates the temperature of the body. If its functional activity be seriously interfered with death will result. Coating it with foil has been known to prove fatal.

To preserve the skin in a healthy state it is necessary to keep it clean. For this purpose let both soap and water be used. The idea that the use of soap will induce diseases of it is erroneous. To be sure, it is possible to use it in excess, to render the part dry and harsh with it, particularly if it be very strong. Let it be pure, and, as a rule, mild. The so-called medicated varieties dealt in by quacks should be avoided; both because being prepared by impostors, they are very certain to be mere trash, and because the special substances which they contain will very likely in themselves do harm. Especially should they be avoided if disease is present; for any agent which may be put into them will far oftener prove injurious than useful.

It is a great mistake to suppose that all diseases of the skin

are of a local character. The majority of them, doubtless, are always manifestations of disorder in the system. From this it follows that local measures will not generally suffice to remove them, that often, to effect a cure, it is necessary to pay attention to the state of the system generally. While evils in the system continue to act, local treatment can force them to disappear, at best but temporarily; until their causes are removed they will tend to break out again.

Diseases of the skin are nearly all non-contagious. Of those to be described only the parasitic ones, erysipelas, and one or two others can be regarded as contagious, and these are only in a measure so.

There is no substantial ground for the common belief that in treating diseases of the skin it is wrong to hastily remove them, that in any case harm may result from "curing the disease too soon." Equally unfounded is the belief that in endeavoring to remove them they may be "driven in," and in some way prove ruinous.

In treating diseases of the skin, cleanliness is deserving of particular attention. All measures promotive of health and strength are beneficial. In short, a hygienic mode of life is the chief remedy for these as well as all other diseases which are inclined to be chronic.

INFLAMMATORY ERUPTIONS.

All reddish patches or rashes which disappear entirely, or almost so, on being pressed slightly with the finger, come under the head of inflammatory eruptions. Measles, scarlet fever, epidemic roseola and typhoid fever are each attended with one, all of which have been described. I will here speak of erysipelas, roseola, urticaria and erythema.

ERYSIPELAS is also called ST. ANTHONY'S FIRE by some. Any inflamed condition of the skin is apt to pass for it. Erythema is confounded with it frequently.

The true form of this disease is seated mostly about the head and face and is accompanied with a high fever and a tendency to prostration of the system. The part affected with it is swollen, red, and of a glossy appearance and is painful. Sometimes blisters form. It is contagious and is very liable to take effect in broken points of the skin. The cause of it is often obscure. The young and healthy seldom suffer from it. It is of a serious nature. Recovery from it occurs in a week, or so.

A wound, or sore of any kind may be affected with this disease; and under such circumstances it is called SURGICAL ERYSIPELAS. The occurrence of it interferes with the healing process and may cause the tissues to slough, and poison the blood. It is often of serious import. From the contagion given off by it all wounds should be guarded with extreme care.

About seventy-five deaths are imputed to erysipelas yearly in Philadelphia, of which about a third are of persons in their first year.

The *treatment* proper for either true or surgical erysipelas consists mainly of the use of a large dose of iron every three, or four hours in connection with a liberal allowance of milk, beef-tea and other nourishing articles of diet. If there is a tendency to exhaustion, stimulants are called for. Laxatives may be used occasionally from the start. If there is much pain and restlessness chloral may be given. The part affected may be anointed frequently with cold-cream, or glycerine, to which a little carbolic acid has been added; or zinc-ointment containing a little of the latter may be used.

ROSEOLA or ROSE-RASH is an eruption which appears in patches of different shapes and sizes on any, or all parts of the body, and is generally accompanied with more or less feverishness. A contagious form of it constitutes what is elsewhere described as epidemic roseola. It is common among young

children ; and one may have repeated attacks of it. Derangement of the digestive organs, or dentition, or any constitutional irritation may cause it. The duration of it is generally only a few days, and it rarely, if ever proves fatal. Occasionally it may be mistaken for either mild scarlet fever or measles. It is not attended with sore-throat, or catarrhal symptoms.

The *treatment* of this affection should be aimed principally at the cause on which it depends. Of itself it does not call for much. A dose of magnesia may be given. The diet may be restricted. Of course, the patient should be protected from cold.

URTICARIA receives often the names of NETTLE-RASH and HIVES. Varicella and eroup are also called hives by many. It is of common occurrence. Scarcely ever is it dangerous to life. Sometimes it is chronic, but it is generally of temporary duration.

This affection is *caused* usually by some derangement of the digestive organs ; and it may often be traced to the use of a particular article of diet, such as shell-fish, or strawberries. Bites of fleas and other insects may cause it in a limited form. Certain conditions of the nervous system have, doubtless, much to do sometimes with its appearance, especially when chronic.

The *symptoms* of this affection vary greatly in severity. The eruption is very similar in all respects to that produced by the stinging of nettles, and it may be limited to a part, or involve the whole of the body. The area affected is covered more or less closely with elevated patches or wheals, which are either round or oblong in shape, and either white or red, or both white and red in color, and are attended with burning, stinging, and itching. Headache, fever and nausea are present in severe cases. All the symptoms generally vanish in a few hours, but may return repeatedly at short intervals. When chronic, the eruption is usually unaccompanied with fever, or any marked constitutional disturbance.

Attention to the regimen is the most essential part of the *treatment* of this affection. Foods which are known to excite it should, of course, not be used. If it tends to become chronic the diet should be made as simple as possible; and wine of iron, or some other tonic may be given. In an acute attack a dose of magnesia is indicated. Rice-flour, or any innocent powder may be freely dusted over the eruption.

ERYTHEMA consists of red patches of variable size and shape on any part of the body, which are not very painful, are unattended with fever and are often of temporary duration. Sometimes papules, or vesicles form on these patches, and in a form of the affection (*erythema nodosum*) which occurs mostly on the shins and forearms of adolescent females, they may be somewhat elevated. This affection is never dangerous to life. The ordinary form of it is caused by derangement of the digestive organs, or the sudden stoppage of the action of the glands of the skin by cold, or irritants. A laxative and the use of lead-water or cold-cream, or a powder locally are all the remedies required, as a rule.

There is a variety of this affection about which I may say a few words specially, namely, CHAFING (*erythema intertrigo*). This condition is produced by friction of opposing parts of the skin, especially when moist and unclean. Young children are very liable to suffer from it. When it takes place it should be attended to as soon as possible; for if it be neglected long it will very probably become eczematous and prove difficult of cure. In connection with cleanliness, cold-cream, or zinc-ointment, or a dry powder will generally cause it to disappear soon. If the creases and folds of the skin are kept clean and dry it will seldom or never occur. Powders are much used by way of prevention of it; among which are rice-flour, corn-starch, prepared chalk, and powdered lycopodium. Any of these may be used, but it is wise to rely chiefly on cleanliness.

PAPULAR ERUPTIONS.

A papule or pimple is a small, conical, reddish elevation of the cuticle, inflamed at its base. It seldom contains any fluid and usually terminates in scurf. There are two papular or pimply eruptions, namely, lichen and strophulus.

LICHEN is generally regarded as consisting of three species; but these are probably only varieties of the same disease. The simple form appears mostly on the face and neck; and it often exists a good while. The form of it which is called PRICKLY HEAT (*lichen tropicus*) is very common among children, especially in warm weather. It may be scattered over the entire body, and be attended with much itching. Sometimes it remains present for weeks. In its worst form (*lichen agrius*) the pimples run together and are attended with a discharge which gives rise to a scab. It may be classed as a variety of eczema.

This affection occurs mostly in the debilitated. Exposure to heat and the use of improper foods often excite it.

In treating this affection rice-flour, or corn-starch, or cold-cream, or zinc-ointment may be used locally. If it be due to heat, measures should, if possible, be taken to keep the body cool; and if the diet is to blame it should be carefully regulated. A dose of magnesia is generally of service. If the system is in a run-down state, tonics, such as the wine of iron and tincture of cinchona, are required in connection with nutritious foods and a mode of life in all respects hygienic.

STROPHULUS or RED-GOWN or RED-GUM may be regarded as a variety of either lichen or eczema. It occurs in infancy, particularly when the teeth begin to cause pain. It may arise from some imperfection of the nourishment, or from living in very warm rooms; but irritation of the gums is, perhaps, the leading exciting cause of it. This eruption consists of very small hard pimples, of a pale red color, dispersed over almost the entire body. It is attended with considerable itching.

While it is present the breathing may be somewhat affected. The duration of it is rarely over three days.

No medicine save, perhaps, a dose of magnesia is required for this affection. A warm-bath serves well to allay the itching as well as the irritability of the system which accompanies it. If the gums are swollen and tense it is proper to have them lanced. The diet and the state of the air should receive attention. Cold-cream, or any of the other agents recommended for local use in treating lichen may be used here.

VESICULAR ERUPTIONS.

A vesicle is a small blister, or in other words, an elevation of the cuticle containing a thin liquid. The immediate cause of it is, inflammation of the derma.

There are three affections of a vesicular nature to be spoken of, namely, sudamina, herpes, and eczema.

SUDAMINA are, as I have already stated, accumulations of perspiration which form when the outlets of perspiratory glands are occluded. They are minute in size, and are almost transparent. During an attack of a fever, or of pneumonia, or any disease in which the state and circulation of the blood are affected, large numbers of them are usually present on the hands, face and other parts of the body; and they are of common occurrence in very warm weather. Their duration is very temporary, and altogether they are of little consequence. No special treatment is required.

HERPES is the name given to a few, or many clustered vesicles seated on a more or less inflamed ground. It is simply an erythema attended with small blisters. FEVER-BLISTER^s or "COLD-SORES" and ZONA or SHINGLES are varieties of it. The latter is the only one which is generally of much importance; but it is not common. It occurs on a portion of one side of the body, especially the trunk, and is attended with not only heat and itching but pain of a neuralgic charac-

ter. It arises in consequence of a nerve becoming inflamed; and hence appears on the part to which a particular nerve is distributed. The popular notion that if it meets around the body it will prove fatal is baseless. This scarcely ever happens; for it cannot, unless a nerve of either side is affected. It may last for several weeks. Other varieties of the disease are mostly of short duration. All may arise from local irritation as well as any disturbance of the system, especially when debilitated. A cold, or fever is the usual exciting cause of most of them.

The use of cold-cream, or zine-ointment, or a powder locally, is all the special *treatment* called for by the ordinary forms of this disease. Of course, any condition of the system to which they may be due should receive attention. For shingles, it may be well to irritate the spine with mustard; and if there is much pain, morphia, or chloral will be serviceable.

ECZEMA is a disease which scarcely admits of a concise definition. It may be acute, or chronic. When it is acute the part is more or less inflamed and exudes moisture, which forms in crusts; and when chronic the part is not only somewhat inflamed but thickened, and gives off dry scales. Marked itching attends it, especially when chronic. Other names applied to the acute form of it are MOIST TETTER, SALT-RHEUM, and RUNNING SCALL; and the chronic form is often called DRY TETTER, or DRY SCALL—terms which are also given to psoriasis. When it affects the hands it receives various designations, among which are, GROCER'S ITCH, BAKER'S ITCH and WASHERWOMAN'S ITCH. CRUSTA-LACTEA or MILK-CRUST and TOOTH-RASH are names given to it as seen on the face, or head of an infant. It cannot always be regarded as a vesicular disease; for it may start as a simple erythema, or a papular, or pustular eruption. When it is erythematous, or pustular in origin it is attended with little or no weeping at any time. It is the commonest of all skin

diseases, excepting acne; almost a half of all the cases met with in Philadelphia are of it. Persons of all ages are liable to be affected with it. There is no reason to believe that it is ever contagious. The duration of it varies from a week, or two, to years.

Of milk-crust I may say a few words specially. Many infants suffer from it. It begins generally as a number of scattered red points, which soon run together. There is then an exudation. The incrustation which forms is yellowish, and is apt to crack. There is seldom any apparent disturbance of the system. Recovery from it may not occur for a long time. Dentition has, perhaps, nothing to do with it.

Rarely is a person in perfect health affected with eczema; it is, probably, always attributable to a constitutional condition, often closely related to either nervous or general debility. A scrofulous taint favors its occurrence; and so does indigestion, or constipation. An improper diet leads to it frequently. Eating excessively sometimes produces it. Not a few cases of it can be referred to the use of beer and spirituous liquors. Often it springs from uncleanliness. Local irritation due to heat, cold, strong soap, or anything else may cause it.

In treating any case of this disease, its cause, or causes should be sought for and be removed, if possible. It is generally proper to use a laxative occasionally in connection with iron, or some other tonic several times daily. Keeping the part dry and moderately warm is important. The frequent use of soap and water is harmful while there is a profuse exudation. Cold-cream alone, or with a little zinc-ointment may be used at first. A mixture of seven parts of lead-water to one of glycerine may often be applied to advantage then; and so may a mixture of half a teaspoonful of carbolic acid to a pint, or so of water. When chronic the part should be washed once, or twice a day with brown soap and afterward be covered with zinc-ointment.

PEMPHIGUS or WATER-BLEBS may be referred to in this connection. It consists of blisters of large size scattered over a part, or almost the whole of the body. It may be acute, or chronic and occasionally proves fatal. Newly born infants afflicted with it usually die soon. Cases of it are not common.

Persons affected with a constitutional vice are those in whom it occurs mostly. The treatment suitable for it is very similar to that recommended for eczema. The blisters should not be broken, but each may be punctured near its base.

PUSTULAR ERUPTIONS.

A pustule is a small elevation of the cuticle containing purulent matter or pus. It is the result of inflammatory action in the derma and may begin either as a pimple or a vesicle.

Exclusive of boils, carbuncles, and the eruption of small-pox, pustular eruptions are usually regarded as of two species, namely, ecthyma and impetigo, but there is no radical difference between them. I will say a few words about either and also boils and carbuncles. The eruption of small-pox is fully described elsewhere.

ECTHYMA consists of a few or many large, round, separate pustules on a part, or scattered over almost the whole of the body. Each pustule ends in a dark, thick scab, and being without a core leaves no scar. Sometimes there is a slight ulceration. There is a little constitutional disturbance. The eruption may continue to appear for a long time. It may occur on account of a vice in the system, or as the result of severe irritation of the skin. When due to the former it is often difficult to remove it completely and permanently. As remedies for it, poultices and bland ointments may be used locally; and if there is a constitutional cause for it, tonics, such as iron and tincture of cinchona are serviceable. A laxative may be used occasionally to advantage.

IMPETIGO consists of crops of small, round pustules on the scalp, or any part, or scattered over almost the whole of the body. It may be caused in the same way as ecthyma and the treatment appropriate for it is similar. There is a variety of it (*impetigo figurata*) in which the pustules are inclined to run together and throw off matter which forms in crusts. This variety occurs mostly on the face, and in young children. It may be classed as a form of eczema. The name of CRUSTALACTEA is usually given to it.

BOILS or FURUNCLES consist each of a large, deep-seated pustule in which there is a core. This core is a piece of dead tissue, and it must come away before a cure can result. When large there may be a scar left. One, or many boils may be present at once, and may continue to come and go for a long time. Young, robust persons are most subject to them. They may be attributed in general to the system being in a disordered state. A widely popular idea is that they carry off impurities from the blood. It is a mistake, however, to suppose that any of the matter in them appears otherwise than as a consequence of inflammation. Their presence is harmful; for they are debilitating.

Attention to the general health is usually required in *treating* boils. Iron, or tincture of cinchona, or some other tonic is often serviceable. The bowels should be kept somewhat loose. To each boil as it appears a poultice of flaxseed-meal may be applied day after day until the matter tends to find its way out at the crown or points. Then it should be punctured and slightly pressed and be poulticed for a day, or two. Afterward a rag anointed with lard, or cold cream, or zinc-ointment may be placed over it for a time.

What are called "BLIND BOILS" are such as mature very slowly. They are met with in persons of a sluggish habit, or who are debilitated. The treatment proper for them is essentially the same as that recommended for boils in general.

A CARBUNCLE or ANTHRAX is similar in nature to a boil, but its superficial extent is generally much greater, and it points at several places. The core may be large. The nape of the neck and the hips are the parts most likely to be affected. Considerable disturbance of the system usually attends it. In debilitated persons death occasionally results. Cases of it are not very common, especially in early life.

The *treatment* suitable for carbuncles is essentially the same as that recommended for boils. A very marked one should be early incised cruciformly, so as to prevent extensive sloughing of the tissues.

TUBERCULAR ERUPTIONS.

A small, hard, inflamed elevation of the skin, caused generally by the presence of sebaceous matter, is what is usually called a tubercle. Such is the definition of acne; but there are several affections classed as tubercular in which the tubercles are neither small, hard, inflamed, nor caused by retained sebaceous matter. All the diseases of this class, however, are rare, especially in early life, except acne, and consequently this is the only one of which I will treat. But before speaking of acne I will say a few words about each of three affections which are more or less related to it, namely, seborrhœa, comedo and milium.

SEBORRHŒA or an excessive flow of sebaceous matter is common in early life, particularly among infants. For the first three, or four months after birth the head is usually affected with it slightly. The discharge may be thin, and simply render the skin oily, or it may be thick and turn into small yellowish, or whitish, greasy scales. In the latter form it constitutes one of the varieties of the affection called dandruff, and might be regarded as a mild eczema. It is usually indicative of debility. The use of soap and water and a lotion made of alum, or some other astringent, once, or twice daily,

in connection with a hygienic mode of life generally proves curative of it soon.

COMEDO is the name usually given to one of the collections of sebaceous matter which form in the sebaceous glands and their outlets; but it may be applied to a number of such collections, when regarded as a special affection. The plural of it is comedos or comedones. Other names for comedos are "BLACK-HEADS" and FLESH-WORMS; the former of which is given to them on account of the outer end of each being discolored from exposure to dust and the like, and the latter, because of their resemblance to little worms when pressed out. Some of them are present on nearly every one's face, and to some extent elsewhere, during the period from puberty to maturity. Before this period they are scarcely met with at all, but after it they are still common. They often excite inflammation and thus result in acne. When there are many of them in the face they are very disfiguring.

A sluggish condition of the system, or insufficient attention to cleanliness will give rise to comedos. The use of rich foods favors their occurrence.

Comedos can generally be dislodged by gently pressing each between the nails of two fingers. Before undertaking to remove a crop of them the face should be given a prolonged washing with tepid water in which a little mild soap is dissolved, so as to soften them. To prevent them from appearing attention should be given to the general health; and besides keeping the skin clean, it should be rubbed briskly once, or twice daily with a moderately coarse towel.

MILIUM is the name given to a little whitish collection of sebaceous matter in an occluded outlet of the sebaceous glands; and it may be applied to a number of them when viewed as a special affection. On the cheek near the eye is where these accumulations are usually seen; but they are not common. They are met with in persons of all ages. It is difficult to

dislodge them by pressure, unless they are first punctured with a needle.

ACNE is an inflammatory affection of the sebaceous glands, excited generally by the accumulation in them of their secretory products. It is usually called "PIMPLES." No other disease of the skin is so common. From puberty to maturity is the period of life in which it occurs most. Those under puberty very seldom suffer from it; and among the mature it is comparatively rare, but it is in them that the worst variety of it (the rosaceous) is met with. It is still more disfiguring than comedos. The happiness of people during adolescence is greatly interfered with by it. Only those who have been affected with it can realize how potent a cause it is of anxiety and depression of spirits. Multitudes of either sex are rendered miserable through it.

This eruption is usually divided into four varieties, the simple (*acne simplex*), the pustulous (*acne pustulosa*), the rosaceous (*acne rosacea*), and the indurated (*acne indurata*), but there is no radical difference between them. In the first variety the tubercles are small, moderately red, and are seated on the face principally; in the second they suppurate freely and are painful, especially if they are on the scalp; in the third they are hard, red, few in number, painful, mature slowly, appear on the face and occur in gross, or intemperate adults only; and in the fourth they resemble those of the second, or third except that they rest on a thickened, inflamed ground. Each tubercle of the first variety lasts three, or four days, each of those of the second about a week, and each of those of the third, or fourth two weeks, or longer. Those of the third, or fourth variety may leave scars. The sebaceous matter which excites the indurated variety is closely confined and deeply seated.

The various forms of this affection spring, as has been already stated, from irritation of the sebaceous glands pro-

duced generally by comedos; and of the *causes* of these I have spoken above. Occasionally, however, they arise from changes in the character of the sebaceous matter induced by the use of certain articles of diet, among which may be mentioned pastry, cheese, fresh bread, nuts, grapes, preserves and richly fried oysters and other animal foods, and by constipation, or any disturbance of the system.

The application of cold-cream alone, or with which a little zinc-ointment is mixed in connection with the use of a laxative occasionally, and a tonic, such as wine of iron, or tincture of cinchona, twice, or thrice daily, for a time, constitutes chiefly the *treatment* appropriate for this affection. Cosmoline may be applied; and in the indurated form a sedative wash, such as lead-water, or a poultice may be resorted to sometimes with advantage. If each tubercle be punctured with a needle, as soon as mature, and pressed slightly, so as to remove its contents, it will disappear more quickly; or by removing early the matter by which it is excited its development may be cut short. The ways and means by which the appearance of the eruption can be prevented are indicated in what has been said of its causes.

SQUAMOUS ERUPTIONS.

As stated above, the cuticle is shedding constantly from birth to death; but in health the scales are neither large nor abundant enough to attract much attention, and do not usually cause any itching. Perversion of this process is the leading feature of several diseases of a chronic character, of which pityriasis, psoriasis, and ichthyosis call each for a few remarks.

PITYRIASIS or DANDRUFF is an affection of which the chief symptoms are, the shedding of small, white scales, a little redness and considerable itching. It is of an erythematous nature. The head is the usual seat of it; but it may affect the whole body. Cases of it are not very common. The dry

form of seborrhœa is similar to it in most respects; and so are mild cases of psoriasis. The liberal use of soap and water and attention to the general health are the essential elements of the treatment suitable for it. Cosmoline, or any simple ointment may be used. Occasionally it is difficult of cure.

PSORIASIS or LEPRO or DRY TETTER consists of dark, reddish, scaling, slightly elevated, circular, or irregular-shaped patches of from a line to an inch, or so, in diameter, on any portion of the body. The patches may be numerous and sometimes are inclined to run together. But little itching attends them. About the elbows and the knees are the favorite seats of the disease. Unlike eczema it generally occurs on the outer aspect of joints. It ranks next after acne and eczema in commonness. A fifteenth of the cases of diseases of the skin met with are of it. To both it and eczema light-complexioned persons are most subject. Persons under six are, perhaps, never affected with it, and cases of it are rare among those under fifteen, or over forty years of age. The causes of it are obscure. It is not contagious. In spite of the use of all possible remedies it may remain present for years. Frequent washing with tepid water and soft soap, in connection with cosmoline, or zinc-ointment, and measures promotive of health generally constitute the treatment proper for it.

ICTHYOSIS or FISH-SKIN DISEASE is a disease in which a part, or almost the whole of the body is covered with thick, dry scales. Generally but little soreness, or itching attends it. Rarely is a large area affected with it; and it is only when this is so that the patient experiences much discomfort. Cases of it in which the skin is merely excessively dry and inclined to crack are usually named ZERODERMA. It mostly appears in children in their second year, and may remain permanently. At first it is in all respects mild. Cold weather usually makes it worse temporarily. The treatment recommended for psoriasis may be used for it.

PARASITIC ERUPTIONS.

Parasitic eruptions are such as are caused by the presence of certain minute organisms. Various species of both vegetable and animal organisms are, doubtless, often present in consequence of eruptions, but a few are certainly instrumental in causing several forms of them.

All these eruptions are in a sense contagious; the organisms which produce them may be transferred from person to person. Every one, however, is not equally liable to be affected with them. Most of them prevail chiefly among badly-nourished, unclean children.

These eruptions being all of local origin can be removed through the use of local remedies, by means of agents which will kill the organisms by which they are produced, in connection with cleanliness; but measures to improve the general health favor their disappearance.

Scabies, favus and several forms of tinea or ring-worm, are the affections of this class of which I will speak. All except the first named are produced by vegetable parasites.

SCABIES or "THE ITCH" is caused by an insect (*acarus scabiei*) which is large enough to be seen by the naked eye. This creature lives on the skin, but the female burrows into it to deposit her eggs. It is to the presence of the developing insects that the eruption is due. The hands are the parts oftenest affected. Rarely does the face suffer. The eruption is usually vesicular, but it may be papular, or pustular, or squamous. Scratching has much to do in rendering it pustular. Little reddish elevations, with whitish, watery tops, may generally be taken for the disease. In the top of each may be observed a small white speck; which speck is the insect by which it has been excited. There is always considerable itching.

The *treatment* of this affection is comparatively simple, and generally proves effective in a short time. After washing the

part on which the eruption is seated with soap and tepid water, let it be rubbed with an ointment formed of lard and sulphur, or cosmoline, or a mixture consisting of from five to ten parts of glycerine to one of carbolic acid. This should be done daily for a week, or so. Personal cleanliness is a matter of great importance. The whole body should be washed frequently ; and let soap be used freely each time.

FAVUS or TINEA FAVOSA is caused by a small fungus (*achorion Schönleini*) and it generally appears on the scalp. Other names for it are CRUSTED- or HONEY-COMB-RING-WORM, SCALLED-HEAD and PORRIGO, the last of which is given also to the pustulous variety of milk-crust. The term scalled-head is given besides to ring-worm, eczema, and, perhaps, other diseases, when occurring on the scalp. This disease is not common. The incrustations which form in it are yellowish in color and cup-shaped, and from each project one, or two hairs. Very often they run together so closely as to form a large scab. Sometimes there is an offensive discharge. The organisms which cause the eruption are present in abundance in the crusts.

The *treatment* of this affection is difficult, but if persevered in always proves effective. The hair of the part on which it is seated may be clipped off close, but it is better to uproot it with a pair of pincers. Taking it out will not prevent it from reappearing ; on the contrary it will likely cause it to come out stronger than before. Then, in connection with a liberal use of soap and water, let any of the remedies recommended for scabies be applied daily for awhile. Occasionally it is necessary to remove the hair several times.

TINEA CIRCINATUS, or ring-worm, is caused by a fungus (*tinca tricophyton*). Cases of it are common. It occurs in circular patches, which are at first small. Each patch is covered with a scaly crust, except at the border, on which are papules, or vesicles, and which is red and elevated ; and it

often becomes ring-like in appearance. The head and face are the parts which are most liable to be affected. *TINEA TONSURANS* and *SCALLED-HEAD* are names frequently given to it when seated on the head. On account of its presence, the hairs split and break, and consequently have an unhealthy, nibbled-off appearance.

This affection should be treated similarly to scabies. When it is seated on the head the hair should be either clipped off close, or removed by the roots.

TINEA VERSICOLOR is caused by a fungus (*microsporon furfur*). It is often confounded with discolorations caused by disturbance of the digestive and other organs met with in adults and called *CHLOASMA*, *MOTH-PATCHES*, or *LIVER-SPOTS*. Rarely does it occur among children. It appears generally in patches on the front of the chest, and is brownish in color and scaly, but not elevated. Each patch may enlarge indefinitely. But little itching attends it. It may be treated in the same way as scabies.

TINEA DECALVANS is due, probably, to a fungus (*microsporon Audouinii*). This name is applied to one, or several bald spots of variable size. There is no eruption. The hair generally reappears, but it may not do so for a long time. This affection is not common. The occasional application of irritants and a lotion of glycerine and carbolic acid constitutes the treatment proper for it.

In this connection I may say that *PEDICULI* or *LICE*, of which there are three species, may be accountable for different forms of sores and eruptions. The presence of these parasites is always due, for the most part, to want of attention to personal cleanliness. When the head becomes infested with them a lotion of glycerine and carbolic acid may be applied to it several times, for the purpose mainly of destroying the vitality of the ova or nits which may remain after using a fine-toothed comb.

POISON-ERUPTIONS.

There are several affections of the skin caused by certain plants and insects, which are frequently met with, and which often require attention. Of a few of these I will speak.

Two species of sumac, the poison-ivy or poison-oak (*rhustoxicodendron*) and the poison-sumac or dog-wood (*rhhus venenata*), may each cause an inflammation of the skin attended with a vesicular eruption. Both are very common in many parts of the country. The POISON-IVY is a climber, and looks somewhat like the Virginia-creeper; but on inspection it will be found that the former has for each leaf three leaflets, while the latter has five. The POISON-SUMAC grows in swamps and attains a height of six to fifteen feet. Slight contact, or even close approach to either of these is sufficient to affect some persons; while others can handle both with impunity. The hands and face are the parts which commonly suffer. Sometimes the swelling and inflammation are very marked, and accompanied with much heat and itching. Mild cases get well within a week, but severe ones may last much longer.

It is usually advisable to begin the *treatment* of the affection excited by either poison-ivy or poison-sumac with a dose of magnesia, or some other cathartic. Lead-water, either alone or with laudanum, is the proper local application while there is active inflammation present. It should be applied early and freely. To avoid any irritation which might result from its contact with open vesicles, it may be put on with a little brush. A wash made of a teaspoonful, or two, of carbonate of soda dissolved in a pint of water is very serviceable, when used early. Zinc-ointment to which some cold-cream, or glycerine and carbolic acid, have been added, is a suitable remedy, even from the beginning of most attacks.

A STING of a bee, or wasp, and a BITE of a mosquito, flea, or bed-bug are each capable of exciting an inflammatory condition of the skin attended with swelling and pain, or itching.

If the sting of the bee, or wasp, is left in the tissues it should, of course, be at once removed, if possible.

Ammonia is an excellent remedy for the stings and bites of insects; and so is either the spirits of Cologne or the sweet spirits of nitre. Instead of one of these stimulants, either lead-water or salt and water may be applied.

DISCOLORATIONS OF THE SKIN.

The color of the skin of any one is liable to vary greatly from that which is natural. The face being the part most exposed is most subject to changes of hue.

The disfiguration caused by discolorations is generally the chief reason why they call for attention. Ephelis, lentigo and vitiligo are those of which I will speak.

EPHELIS or SUN-BURN is familiar to every one. The skin may be much inflamed. Two, or three days after exposure, in severe cases, the cuticle falls off in large scales. Cold-cream, or cosmoline, or glycerine, or any simple ointment is all the remedy usually required for this affection. If the inflammation is marked lead-water may be used at first.

LENTIGO or FRECKLES is an affection from which few are entirely free. Persons of light complexion, especially those with reddish hair, are most subject to it; and it is apt to be worse in summer than winter. The pigment is seated in the inner layer of the epidermis. The treatment of this affection is not often very satisfactory. Many remedies are used for it but very few of them do much good. Lemon-juice, cucumber-juice, horse-radish-juice, and vinegar are all more or less serviceable. It is possible to eat out the spots with a strong solution of nitric acid; but it is not advisable to do, as severe inflammation of the skin may be excited. Blisters are not of much value, for they remove only the cuticle.

VITILIGO or VEAL-SKIN or PIEBALD-SKIN is an affection in which the skin becomes unnaturally white in spots. Cases

of it are rare. If the whiteness is universal it constitutes what is called ALBINISM—a condition which is usually present from birth. In treating this affection measures to improve the health generally are needful. A stimulating wash, such as oil of turpentine may be used occasionally ; but no remedy is of much avail. For albinism nothing special can be done. It generally lessens in degree as the person grows older.

GROWTHS OF THE SKIN.

Excessive development of one, or more of the different tissues of the skin is the chief feature of several conditions which merit special attention. I will treat of verruca, clavus and nævus.

VERRUCA or WART is a growth in which all the layers of the skin are involved. It is of common occurrence among the young. Some are particularly liable to suffer from it. A large number may be present, especially on the hands. Nothing scarcely is known as to its cause. It is not contagious.

There are plenty of efficient *remedies* for this ugly excrescence. By paring it close to the quick and applying a paste made of wood-ashes, it will usually disappear in a few days. From containing potash the wood-ashes are mildly caustic. In place of them a drop, or two of nitric acid may be applied.

CLAVUS or CORN may appear on any part of the body but it is rarely seen anywhere but on the foot. It arises from intermittent pressure produced by a bad-fitting shoe. In nature, it is simply a thickened condition of the cuticle. There are two varieties of it, the hard and the soft.

A corn is usually easy of *treatment*, if the cause which has produced it be removed. Let as much as possible of the thickened tissue be pared off. This may be all that it is necessary to do ; but it may be well to apply a paste of wood-ashes. If much inflamed it should be poulticed before it is pared. This plan of treatment is suitable for both varieties.

NÆVUS or MOTHER-MARK or BIRTH-MARK or MOLE, is always present to some extent from birth. The patch may be elevated but it is very often not. It is seldom large. In color, it varies greatly; it may be red, or brown, or black, or almost like the rest of the skin. When red it is particularly apt to be vascular, that is, made up largely of blood-vessels, especially if it be elevated. A vascular one enlarges and becomes brighter in color under excitement; and warm weather, or anything which accelerates the circulation has a similar effect. Not infrequently there is some hair on it from adolescence forward. Between it and a mole, mouse, strawberry, or some other familiar object a resemblance may often be traced. Sometimes it is not unlike a stain, and when reddish it is frequently spoken of as a CLARET-STAIN, or a PORT-WINE-MARK. The face is the part, perhaps, on which it is most likely to be. A large number may be present, but this is seldom the case. Of the cause, or causes of it hardly anything is known. That impressions made on the mind of the mother may sometimes induce it is possible. This, however, is questioned by some.

A popular prejudice exists against the removal of mother-marks, but there is no special ground for it. Certainly it can be done without much difficulty in most cases. But occasionally a scar may be left. Ordinary washes, or salves are of no avail. If they are non-vascular, and even when slightly so the application of any caustic agent, but preferably nitric acid will have the desired effect. When markedly vascular the best way to do is to break the skin around each at the base and then apply a ligature made of silk. If a needle be passed through it and allowed to remain it will hold the ligature in position when applied. As a remedy to allay irritation of them there is nothing better than tincture of iodine applied once, or twice daily with a little brush.

CHAPTER XIV.

MISCELLANEOUS DISEASES AND CONDITIONS.

Bright's Disease—Incontinence of Urine—Choking—On Swallowing Certain Objects—Asphyxia—Drowning—Falling of the Bowel—Rupture—Club-foot—Tongue-tied—Felon—Enlargement of Glands—Bleeding from the Nose—Frost-bite.

BRIGHT'S DISEASE.

Bright's disease is so-called because it was first carefully described by an English physician of that name. It is seated in the kidneys, both of which generally are affected at the same time. These organs are situated, one in either loin, and are each about four inches in length, two in width and one in thickness, in the adult. They secrete the urine; which liquid flows immediately from them into the bladder. When the disease in question is present albuminous matter passes away from the blood with their secretion—a fact which is rendered apparent by boiling a little of the latter and consequently coagulating the albumen which is in it. There are two forms of it, the acute and the chronic, both of which are of serious import. A large percentage of the cases die, sooner or later. Nearly two hundred deaths are caused by it yearly in Philadelphia, of which a sixth are of minors. Very few under five years of age succumb to it; for the reason, probably, that they are not apt to suffer from grave attacks of the acute form of it. More males than females are destroyed by it.

This disease is usually *caused* by exposure to cold. It is very liable to occur after scarlet fever. On account of differences in their mode of life males are more subject to it than females.

The *symptoms* of the acute form of this disease, which is

essentially an inflammatory condition of the kidneys, are, backache, headache, pains in the limbs, sickness at the stomach, some difficulty in breathing, fever and more or less dropsy of the entire body, which often comes on very rapidly. The urine is scanty and not infrequently contains blood as well as albumen. Convalescence begins in from one to three weeks, or the chronic form of the disease results. Relapses are common. Death may be produced by the presence in the blood of materials which the kidneys fail to remove, or by dropsy. When produced by the former, convulsions mostly precede it.

The chronic form of this disease often develops insidiously and it may not prove fatal for many years. The chief indications of it are, debility and pallor in addition to albumen in the urine. When it is very marked there is dropsy.

Besides keeping the patient in a warm room in which there are no draughts the *remedies* for the acute form of this disease are, citrate of magnesia, or some other active cathartic, lemonade, flaxseed-tea, and a mustard-plaster for the loins. The cathartic and the mustard-plaster may be repeated. A mixture of the solution of the acetate of ammonia, paregoric, and syrup of squills may be given several times daily. No stimulants are allowable at first. Hot hip-baths are serviceable. The diet should be liquid and bland.

Beyond protecting the body against cold and wet and supporting the strength through the use of plenty of nourishing food but little can be done for the chronic form of this disease. Iron is the only medicine which is likely to do good.

INCONTINENCE OF URINE.

Passing the urine during sleep or involuntarily is a not uncommon affection among children. It generally begins during dentition, and may continue to some extent until the period of puberty, or later. Nervous excitability, or an acid condition of the secretion may account for it at times, especially

at first ; and it may take place occasionally in consequence of using an excessive amount of liquids, or from sleeping over-soundly ; but it is oftener due to habit than anything else. Among properly trained children it is of rare occurrence.

In *treating* this affection there is nothing to be gained by punishing the patient ; nor is it justifiable to do so ; for his will has nothing to do with it. But he should be made to understand that it is shameful, and that he should do all in his power to prevent it. Let the cause of it be sought for and removed, if possible. If it springs from nervous excitability which can be traced to the presence of intestinal worms, or the use of tea, or some other stimulating article of diet, particularly at a late hour, the remedy in either case is obvious ; if it springs from the urine being acid and irritating let the diet be simplified ; if it springs from the excessive use of liquids let the allowance of these be restricted ; and if it springs from sleeping over-soundly less exercise may prove beneficial. Lying on the back should be avoided, as it is promotive of the affection. A cold-bath at bed-time is always very advantageous. The urine should be passed before going to bed and at a fixed hour nightly. It is hardly advisable to form the habit of urinating in the middle of the night. As for medicine it is of very little use. In very excitable children bromide of potassium may be of value.

CHOKING.

The lodgment of a piece of food, a button, or anything else in the throat, or the gullet is an accident of frequent occurrence among children, and through interfering with the breathing it occasionally proves fatal. When it takes place the coughing excited generally suffices to speedily afford relief ; but if it does not, efforts should be at once made to bring the object away with the finger. Let the head be inclined forward. If the offending body has passed some

distance into the gullet attempts to swallow, assisted by a few mouthfuls of water will nearly always carry it into the stomach soon ; but if they do not it is wise to obtain the service of a physician.

When any object enters the windpipe, "goes the wrong way," serious symptoms of strangulation are immediately produced. If it is a liquid, it is speedily brought up by coughing. Except it be small, if it cannot be removed quickly, life is in danger. Should relief not be obtained within a few minutes let a physician be sent for without delay.

ON SWALLOWING CERTAIN OBJECTS.

Swallowing a button, or a piece of money, whether of nickel, copper, or silver, need not be the cause of alarm ; for even if of considerable size it will very probably find its way out of the system in a day, or two, without producing colic, or any serious consequences. A dose of castor oil, or of any mild laxative may be given ; but this is not actually necessary. Nor need the patient gorge himself with food, as some advise, for the purpose of forcing the object ahead.

Swallowing a pin, or a needle may be destructive of life, sooner or later, through becoming lodged and exciting inflammatory action in some part of the digestive track ; but it undoubtedly may pass out of the system without doing any harm. Beyond giving a laxative and keeping the patient still for a few days, nothing can be done, when this accident occurs.

ASPHYXIA.

The complete, or almost complete suspension of breathing, the action of the heart and all the other functions for a longer or shorter period is called asphyxia. This condition may be brought about by choking, pressure on the windpipe, inhaling carbonic acid, or any other gas which will not support life, or immersion in water. No difference how it may be caused,

the great indication is to restore respiration, to see that the breath is fully drawn once in every three seconds, or so. When due to choking, or pressure on the windpipe, all that is required to be done generally, is to remove the cause; but when produced by breathing a gas which will not support life, or immersion in water, artificial respiration must be practised and persevered in till recovery results, or there is no longer any room to hope for a successful result. This operation consists in placing the patient in nearly the recumbent position, on his back, and then raising both his arms at the same time, from alongside his body to above his head, and back every three seconds, or so. While this is being done the tongue should be held well forward in the mouth; for it is inclined to recede toward the throat and consequently obstruct the ingress of the air. A little cold water may be dashed somewhat forcibly against the chest occasionally, in the hope of restoring the action of the lungs and heart through the resulting shock; but it should be wiped off immediately, for it will do harm by abstracting heat. The body should be covered with blankets, or any warm articles of clothing, under which should be placed bottles filled with warm water, and mustard-plasters may be applied to the feet and legs. Rubbing the hands and other parts does good. Ammonia may be used as an inhalant; and as soon as swallowing is possible a little aromatic spirits of ammonia, or brandy, or any stimulant may be given at short intervals until breathing is well restored, when it, as well as the use of the bottles of warm water and mustard plasters should be discontinued. As vitality returns, care must be exercised to prevent congestion of the lungs and brain from arising in consequence of the reaction or excitement of the system which follows. The measures which should be resorted to for this purpose are, the application of cold water to the head and the use of a cathartic, especially the citrate of magnesia, given in small amount frequently, as it serves to

allay the thirst from which the patient is apt to suffer. In addition to these measures it may be wise to give a dose of the solution of morphia, or some other sedative every three, or four hours, or oftener, for a day, or so. The diet should be simple and non-stimulating, milk being the principal item of it, while the system remains in an excited condition.

DROWNING.

Drowning is a common accident. In it, death is produced by the exclusion of air from the lungs, by asphyxia. As soon as the breathing is stopped, the blood being no longer purified speedily becomes unfit to support life. A fatal result ensues in from one to ten minutes.

In any case of drowning, if the body has not been submerged longer than from five to ten minutes, it is often possible to restore life. Instances are on record, of animation being restored, in which the period of submersion was over twenty minutes. The first thing to do is, to remove any water which may be in the throat and, perhaps, in the lungs. This is done by inclining the head downward for a minute, or so. Then remove the wet clothing as quickly as possible and resort to precisely the same treatment as has been recommended for asphyxia in general. Rolling the patient on a barrel is a barbarous custom, which is still in favor; the main object of which is to rid the lungs of water; but as there is seldom any water in these organs it is mostly useless as well as cruel.

FALLING OF THE BOWEL.

Through straining caused by either constipation or diarrhoea, a portion of the rectum is liable to be forced out, to prolapse. This is a matter of somewhat common occurrence among delicate children. There is little or no danger attached to it; but the part should be restored at once to its natural position; both because this is easier done then than later, and

because neglecting to do it early favors the return of the trouble. Its replacement is effected by the application of gentle pressure while the patient is lying on his back, with his hips a little raised ; and it is usually accomplished without much difficulty.

To prevent this displacement from occurring let the bowels be kept regular, and all unnecessary straining be abstained from. The tendency to it usually stops as soon as the patient gets into a healthy condition.

RUPTURE.

Rupture is also called **HERNIA**. It is a swelling of variable size about the navel, or groin, caused by the presence of a loop of intestine which has passed through one of two openings which naturally exist, but which are small when in their normal condition. It generally disappears as soon as the patient lies down in the supine position. Cases of it are frequently met with among infants, and it is very common among adults. It may arise from straining, or lifting heavy weights ; but in the very young it is due mainly to the opening referred to above being very patulous.

When this affection is first noticed a physician should be consulted about it. By taking it early it can generally be cured without much trouble ; whereas if neglected long it will prove rebellious to treatment, and likely be to some extent disabling for life. A support or truss is the chief remedy required ; the object of which is to keep the intestine entirely within the abdominal cavity. When the rupture is seated near the navel a very simple contrivance answers every purpose

In rupture, if the loop of intestine becomes firmly lodged, inflammation and ulceration of the part are apt to occur, in connection with vomiting and prostration, within a day, or two, unless it be pressed back into the abdomen soon.

CLUB-FOOT.

Club-foot, or TALIPES are names given to a variety of deformities of the foot which may, or may not be present at birth. I will not give any description of them. I may say, however, that they arise from derangement in the action of the muscles. It is the duty of parents to obtain competent surgical advice as soon as possible; for if taken early a cure can generally be readily effected. Often it is unnecessary to do more than keep a suitable support, a sort of shoe, applied for some time; and any surgical operation which may be called for under any circumstances is of a comparatively simple character.

TONGUE-TIED.

A tongue-tied child is one in whom the organ is bound to the floor of the mouth in such a way that it is impossible to suck, or speak well, or put it out freely. The retaining band is simply an abnormally extensive frænum. This condition is rarely very marked. Cases of it are far less common than people in general suppose. Any one who can put the organ out to the ordinary extent is not affected. When it is present relief is afforded by partially incising the retaining band with a pair of scissors. This is easily done, but as there is danger of cutting a little artery, and thus producing considerable hemorrhage, it is unwise for any but physicians to do it.

FELON.

A felon or WHITLOW is essentially a deep-seated boil, situated mostly in one of the fingers, and caused generally by a bruise. It is common, and is of various grades of severity. The deeper it is seated the worse it is. When mild it is often spoken of as "A FLESH-FELON," and when severe, "A BONE-FELON." It always begins with inflammation, and if not checked terminates in a discharge of pus or matter, in connection with a core. The pain is marked in all cases, but in

some it is excruciating. The reason why it is so great in some is because the matter which gathers is closely confined beneath the tendons and other dense tissues. The course of the disease is apt to be slow; and it generally leaves a very perceptible scar. Not infrequently the use of a joint is lost; and occasionally the bony tissue becomes so badly diseased that it is necessary to remove a portion of the finger.

The *treatment* of this painful affection should be prompt and decided. When a severe deep-seated inflammation arises in a finger, or in the palm of the hand, a blister should be applied over it as soon as possible. If this does not produce a cure in a day, or two, and the pain is very great, a deep incision should be made, so as to allow the pus to pass out as it forms. This is apparently a heroic measure, but it is frequently the only one by which suffering can be curtailed and the use of the finger, or the finger itself, can be preserved. Whether the incision is made or not a poultice of flaxseed-meal should be kept applied until the discharge ceases.

ENLARGEMENT OF GLANDS.

Little glands, very similar to those found in the mesentery, exist in various portions of the body, as part of a system of minute absorptive vessels, the LYMPHATICS. Several of them are situated about the neck, under either arm, and in either groin. They are very liable to become enlarged and somewhat inflamed at times, especially in persons in whom there is a scrofulous taint. If there is a sore, or wound on the hand, one, or more of those under the arm are apt to be affected, and if on the foot, one, or more of those in the groin may suffer. Seldom, however, is the inflammation active and pus formed.

No special *treatment* is needful for a slight enlargement of lymphatic glands. But measures to improve the general health are indicated. The best medicine to use is the syrup of the iodide of iron. If there is considerable enlargement of

one, or more, the tincture of iodide should be applied locally, once, or twice a day. This agent has a scattering effect. Friction acts very similarly and may be used for the purpose. If suppuration be threatened poultices should be used. When such an abscess forms about the neck it should be lanced early, so as to prevent, if possible, an ugly scar from being left.

BLEEDING FROM THE NOSE.

Bleeding from the nose or *EPISTAXIS* is of common occurrence in early life, especially from the tenth to the fifteenth year. Some are far more subject to it than others. If it does not take place often and is not very profuse it generally does the person good rather than harm. Keeping still usually suffices to stop it in a few minutes, particularly if the head be kept elevated. Bathing the forehead with cold water is advantageous. A piece of ice, or of cold iron may be applied to the nape of the neck. In very bad cases it may be necessary to plug the nostrils with cotton; and this material may be saturated with strong alum-water.

FROST-BITE.

Frost-bite or *CHILBLAIN* is an inflammatory condition of the skin and some of the tissues beneath it, which is apt to arise in the foot, or any other part of the body which has been exposed to a very low temperature or frosted. When present in a mild form it may be classed as an erythema (*erythema pernio*) and treated as such. In bad cases gangrene occurs.

To prevent this affection, a part which is frosted should not be exposed suddenly to a high heat. Let it be well rubbed and let the application of warmth be very gradual.

Lead-water, or alum-water is all the remedy required by ordinary cases of this affection. When chronic, a stimulating application, such as oil of turpentine is of service. If the skin is broken a flaxseed-meal poultice should be applied.

CHAPTER XV.

FAULTS OF DEVELOPMENT.

Preliminary Remarks—Cyanosis—Hare-lip—Cleft-palate—Spina-bifida.

PRELIMINARY REMARKS.

The human organism being exceedingly complex in structure, and being subject to conditions while developing, it is wonderful that it is not often markedly imperfect in many respects. Instances, however, in which it is to some extent unnatural are by no means rare. Most of the glaring defects in it which are met with have resulted from perversion, or partial arrest of development of parts. What are called monsters are simply creatures that, on account of certain conditions, have developed in such a way as to be pronouncedly unlike the normal type. Formerly they were regarded by many in a very strange light; they were taken to be special creations produced as judgments.

All faults of development or mal-formations may be classed as variations in the size, situation, or structure of parts, or a redundancy, or deficiency in the number of certain of them. Examples of abnormal largeness, or smallness of parts are often seen. Cases in which parts are wrongly situated are not rare. A marked illustration is where the heart is in the right instead of the left side of the chest—a condition which is extremely seldom present. The structure of different parts is frequently far from being natural. A redundancy, or deficiency in the number of the fingers, or toes is not uncommon. There may be only one finger and the thumb. An excess in the number of fingers arises mostly from the presence of an additional thumb. The supernumerary is generally wanting in size and void of use.

Cyanosis, hare-lip, cleft-palate and spina-bifida are the faults of development of which I will speak specially.

CYANOSIS.

Cyanosis, or as it is commonly called THE BLUE DISEASE, is a condition, the leading feature of which is blueness of the skin. Often it is not marked and disappears in a few days. There are about a hundred deaths from it yearly in Philadelphia, nearly all of which are of persons less than a month in age. In most cases it consists essentially of a defect in the heart, in consequence of which more or less venous or impure blood joins the arterial or pure. Before birth there is a valvular opening in the partition which separates the right from the left half of this organ, through which the blood passes. If this opening does not disappear entirely as soon as the child begins to breathe, the result is the disease in question. Should the opening which remains be small, but little of the venous blood will go through it, and consequently the skin will not be markedly blue. Before birth, I may say, the blood is not purified in the lungs; it takes place through those of the mother.

As already stated this affection may be very slight and may disappear in a few days. The less marked the blueness is the better is the chance of recovery. All that can be done specially by way of treatment is, to keep the child on its right side and where it can have plenty of fresh air.

HARE-LIP.

A cleft or divided condition of the upper lip such as is present naturally in the hare receives the name of hare-lip. Rarely is the lower lip affected. It is not only unsightly but interferes with eating and speech. Cases of it are common. Occasionally there are two clefts.

This mal-formation can usually be removed practically by

a simple surgical operation. If it be attended to early very little scar may be left. Freshening the edges of the opening and holding them together with strips of adhesive plaster, or stitches, or both these, until they adhere of themselves, are the elements of the operation required. It is simple, but a surgeon should always be employed to perform it.

CLEFT-PALATE.

A cleft or divided condition of a part, or the whole of the palate or roof of the mouth is a not uncommon condition. Often it is accompanied with hare-lip. Both eating and speech are often seriously interfered with by it. When taken early it can generally be removed practically by an operation similar to that practiced for hare-lip.

SPINA-BIFIDA.

A cleft or divided condition of a part of the spine or bony sheath in which the spinal cord rests is called spina-bifida. Usually the skin is not broken. At the seat of the malformation there is more or less swelling. This condition is somewhat common. There are about ten deaths from it yearly in Philadelphia, of which nearly all are of infants. When not very marked it may gradually disappear. If there is an opening, or one forms, the patient generally sinks soon from exhaustion. Beyond attention to the general health, scarcely anything can be done for it. However, a surgeon should always be consulted at once.

CHAPTER XVI.

RESULTS OF VIOLENCE.

*Preliminary Remarks—Shock—Contusions—Incised Wounds—
— Punctured Wounds — Lacerated Wounds — Poisoned
Wounds—Burns—Scalds—Sprains—Dislocations—Frac-
tures—Poisoning.*

PRELIMINARY REMARKS.

Injuries caused by violence of some kind are common ; but fortunately they are generally not of a serious nature. Most of those which occur neither require nor receive any but domestic treatment ; and hence it is proper for parents to be informed as to their requirements. Nor should they be totally ignorant of what to do, at least temporarily, for those of much gravity ; because these as well as those of little consequence usually happen unexpectedly and cannot receive the attention of a surgeon at once. Prompt action of a simple character is often of extreme importance. Thus the preservation of life may depend on the immediate application of pressure on a certain side of a wound attended with profuse hemorrhage, or the administration of a spoonful of mustard in poisoning from any of a variety of agents.

SHOCK.

Nervous prostration arising from a fall, blow, or any profound impression on the body, or mind, is called shock. If produced by jarring of the brain it is called CONCUSSION OF THE BRAIN. It is almost similar in nature to fainting. The symptoms of it are, more or less loss of power, paleness, coldness, and in severe cases entire unconsciousness. Except when

slight the pulse is slow and nausea and vomiting are present. Recovery may occur in a few minutes, or hours, or it may not take place for a number of days. Occasionally the mental faculties remain somewhat impaired for a long time, or even permanently. It seldom proves fatal. About half a dozen of deaths are imputed to it annually in Philadelphia.

Simple cases of this affection call for the same *treatment* as fainting. Place the patient in the horizontal position, and loosen the clothing, especially about the neck and chest. Give a teaspoonful of whisky, or brandy, or half this amount or less of the aromatic spirits of ammonia in a little water, every half hour, or so. The vapor of ammonia may be breathed to advantage. A little water may be dashed on the face and chest at short intervals. In cases in which there is little action of the heart and lungs, and consequently coldness, the application of mustard-plasters and bottles filled with hot water in addition to the use of warm clothing is indicated. A warm-bath is often serviceable. As in asphyxia, there is danger of congestion of the brain and lungs occurring when reaction sets in; and it should be carefully guarded against. The excessive use of stimulants given for the purpose of hastening recovery is frequently accountable for it. In prolonged cases such remedies should be given very sparingly. Noises are harmful. The diet should be simple.

CONTUSIONS.

Contusions or BRUISES are injuries produced by blows, falls, or collisions and are attended with swelling, discoloration and more or less heat and pain. When the skin is broken and the tissues beneath it are seriously affected the injury is often called A COMPOUND CONTUSION. Swelling without discoloration is due to the presence of serum of the blood in the tissues; and swelling with discoloration is due to the presence of both serum and some of the thick or colored part of the blood.

When there is discoloration it is an indication that a capillary, vein, or artery is lacerated; for otherwise it is impossible for the red part of the blood to pass into the tissues. About the head and wherever the skin is loose a very slight injury may cause much swelling; and these are also the parts most likely to be markedly discolored. Through gravitation of the effused blood the swelling and discoloration may appear beneath the point of injury. This is seen in "A BLACK EYE."

A simple contusion may be prevented in a measure from causing swelling and discoloration by the early application of a piece of ice, or plenty of cold water. Lead-water, or a mixture of equal parts of lead-water and laudanum, or tincture of arnica may often be applied to advantage. Each of these remedies serves to allay both pain and swelling. If the discoloration lingers its disappearance may be hastened by washing the part with warm water and afterward rubbing it well several times daily. The use of spirits of cologne, or any other stimulating agent, or vinegar in rubbing it may be serviceable.

A compound contusion may be treated in the same way as a simple one at first. If any dirt is present, let it be removed, and then draw the skin as nearly as possible into its proper place. Should matter be inclined to form a poultice of flaxseed-meal is indicated; and a fresh one should be applied daily until the disorganized tissues have disappeared entirely.

INCISED WOUNDS.

A leading feature of incised wounds or CUTS is HEMORRHAGE or BLEEDING. If an artery is cut, blood flows spoutingly; and if a vein, or capillary is cut it oozes out. By pressing close to the side of the wound which is the nearer to the heart, the bleeding will stop, if it be from an artery; and by pressing close to the side of the wound which is the further from the heart, it will stop, if it be from a vein. An injury to a

large artery is much more dangerous to life than one to a large vein ; because the bleeding from the former is by far the harder to control. In small cuts, generally, only a few capillaries are divided and consequently they are not attended with a great deal of bleeding. Here as when a vein, or artery is severed Nature tends to stop the flow, through the formation of a clot.

A simple cut requires only the application of a compress to hold the edges of it together. Ointments are not required and many of those frequently used retard the healing process. In addition to the compress, cold water may be applied for a time, if the bleeding inclines to continue long. If the wound is large, or inclined to gap, strips of adhesive plaster may be resorted to, or it may be stitched with a stout thread, made of silk ; but neither the strips nor the stitches should be so close together as to confine within any matter which may form. The stitches may be allowed to remain in for about a week, or until the wound is nearly well. If the wound is seated in the scalp it is sometimes possible to hold the edges of it in position by means of little strands of the hair. When a very large artery is cut it is necessary to tie it, in order to stop the bleeding. Until a surgeon is at hand to do this the loss of blood should be prevented by pressure.

In this connection I may say that a wound heals by what is called the first intention when it gets well quickly and without the formation of matter, on bringing the edges of it close together. Very extensive cuts may heal completely, in this way, within a few hours.

PUNCTURED WOUNDS.

Wounds made by pointed instruments are apt to be deep ; but this is not a matter of much consequence, except they are seated where a large blood-vessel, or any important organ is liable to be injured. The escape of a very small amount of

blood internally may result fatally through the inflammation of parts excited by it. If the stomach, or intestines be cut to any extent, a fatal inflammation will almost certainly ensue. A wound of the lungs is always of serious import; but if it be not extensive, or attended with much bleeding there is a fair chance of recovery from it.

Punctured wounds which do not involve internal organs are essentially of an incised character; and hence the remarks made on the treatment of incised wounds are applicable to them. When an internal organ is involved the patient should be kept perfectly still. This is the chief part of the special measures indicated. Stimulants should be given sparingly, if at all; for by exciting the action of the heart they favor bleeding. Of course, a surgeon should be summoned immediately.

LACERATED WOUNDS.

When the skin and other tissues are lacerated or torn, there is not much bleeding generally. The free use of cold water at first, and compresses and bandages are the chief remedies for injuries of this kind. If the edges of the wound can be brought together, or almost so, it may be well to resort to stitches. Healing by the first intention cannot be expected.

POISONED WOUNDS.

Incised, punctured, or lacerated wounds may be at the same time poisoned. Bites are among the worst of poisoned wounds. Those of the rattlesnake and other venomous serpents, and of rabid dogs generally prove fatal; and those of animals in general, including man, are not usually inclined to heal kindly, and are not infrequently attended with erysipelas. A wound of this kind should be cleansed immediately and thoroughly with hot water. It may be sucked with the mouth. Until it is cleansed firm pressure should be made all around it, so as to delay the absorption of the poisonous matter

present. If it is caused by a rabid dog, or a venomous snake, it is wise to cauterize it to some extent with a red-hot iron, or nitric acid, immediately after washing it as well as possible; and until after it is both washed and cauterized, pressure should be maintained all around it. Of course, there is no ground for the idea that the survival of the animal by which one has been bitten has anything to do with the healing of the wound, or its danger to life.

BURNS.

A burn is an injury produced by flame, or any form of dry heat. A slight degree of heat causes congestion of the skin; a moderate degree vesicates; a high degree blisters; a very high degree chars the skin; an extremely high degree chars not only the skin but to some extent the soft tissues beneath it; and when it reaches a certain degree it destroys even bone. Of course, the longer the heat is applied the deeper is the burn likely to be. Marked pain attends this form of injury, and if an extensive area is affected, the system is always severely shocked. Even when very mild, if it be large, death may result, particularly if the patient be a child. Recovery can scarcely be expected if a half of the surface of the body is vesicated, or if a quarter of it is charred, however slightly, or if a square foot of it is destroyed to the bone. Between sixty and seventy persons die annually from burns and scalds, in Philadelphia, a half of whom are under ten years of age. About a third more females than males are carried off thus.

Burns call for prompt *treatment*, on account of the pain which attends them. When slight the early application of very warm water affords relief soon. If cold water be used it is necessary to continue applying it for a considerable length of time. If either vesication or charring has occurred, a mixture of lime-water and flaxseed-oil may be used. This is known as Carron-oil. A solution of soda, or what is very similar, a

lather of strong soap may be used. If the air is prevented from touching the part, the patient suffers comparatively little. This can be done by means of lard, flour, or cotton saturated with Carron-oil, or a solution of soda, or soap. A poultice of any sort answers the same purpose. In addition to local remedies, aromatic spirits of ammonia, or whisky, or any other stimulant may be given in moderate amount at short intervals. If there is much pain relief can be procured through the use of either chloral or the solution of morphia.

SCALDS.

A scald is an injury produced by a hot liquid of any kind. Oil, pitch, or any other viscid substance causes a deeper one than water, because it does not run off the part as fast. When it is produced by water there is no charring but the tissues may be terribly inflamed. The remarks made on the grades, symptoms and fatality of burns apply also to this class of wounds; and the same remedies are appropriate for both.

It is well to know that from both scalds and burns when severe, scars and deformities are very apt to be left, in spite of all that can be done to prevent them. These consequences are directly due to the contraction of the tissues which lie immediately beneath the skin. By way of prevention of this contraction or shortening, the finger, or whatever part is injured should be kept almost constantly extended, until a cure is effected.

SPRAINS.

A sprain or STRAIN is an inflammatory condition of a joint, or any other part of the body produced by excessive stretching of the tissues. The ligaments which retain adjoining bones in position are affected more frequently than the muscles. At times the force is so great that the tissues are more or less torn. The wrists and the ankles are the joints most likely to suffer. Pain, swelling, and redness of the part are the main

features of this wound. If it be very severe there may be considerable shock experienced. Recovery is generally slow.

Rest is the most important item of the *treatment* of this class of injuries. Cold water is an excellent remedy at the start. If it be applied early and freely, and the part affected be kept elevated, swelling and pain may be curtailed greatly. Soap-liniment, either alone or with an ounce, or so of laudanum added to every four of it, is a good remedy. A mixture of equal parts of lead-water and laudanum is very serviceable, in severe cases, for a day, or two at first. When the inflammation begins to subside the part may be bandaged somewhat tightly, and rubbed once, or twice a day with a stimulating liniment, such as oil of turpentine, or a mixture of equal parts of oil of turpentine, ammonia and olive oil. In treating sprains it should be borne in mind that if a joint is allowed to remain entirely motionless it will soon become stiff from the adhesions which form. Hence it should be moved a little every day, except during a few days at the start.

DISLOCATIONS.

When the end of a bone is out of its natural position, or in other words out of joint, the condition is called a dislocation or LUXATION. It may be incomplete, or complete and simple, or compound. It is incomplete when the bone is only partially out of its socket, and complete when it is entirely out; and it is simple when the muscles and skin are uninjured and compound when they are injured. The displacement may be in almost any direction, at most of the joints

The *cause* of this class of injuries is generally a fall, or blow. The habit of dragging, or lifting children by their arms is not infrequently accountable for it, at the shoulder-joint, the one at which it occurs oftenest.

The *symptoms* of an ordinary dislocation are, inability to move the displaced bone freely, swelling and more or less pain

and numbness. At the joint, an unnatural prominence on one side and a hollowness in the position of the vacant socket are usually observable. If the ligaments and other tissues are much injured the inflammation is apt to be marked.

The bringing of the displaced bone into its natural position by traction, lateral pressure, or otherwise, is the most important part of the *treatment* of a simple dislocation. When it is incomplete, this can generally be easily done, but when it is complete it is frequently difficult to do it, especially if it is not attended to before marked swelling has developed, or for a long time after its occurrence. The service of a surgeon is required mostly; and it is well to procure it as early as possible; but it is unnecessary to be in breathless haste about it.

Before the displacement is reduced cold water may be applied freely, in order to keep down swelling and pain; and after it is done the plan of treatment advised for sprains is indicated. While recovery is taking place, care should be exercised to prevent stiffening of the joint.

Compound dislocations are grave injuries; but they are not common. When the opening is large and the soft tissues are severely wounded, amputation is generally necessary.

FRACTURES.

A fracture is a broken condition of a bone. It may be simple, compound, comminuted, complicated, or impacted. It is simple when the soft tissues are but slightly injured and the skin unbroken; compound when there is an opening through the skin; comminuted when the bone is broken in more than one place; complicated when a large artery, or any other important part is severely wounded; and impacted when one end of the bone at the point of fracture is forced into the other. In the great majority of instances it is simple and uncomplicated.

A fracture may be *caused* by a fall, blow, or any other

form of mechanical force. If the bones are in a diseased state it may result from the action of the muscles.

The *symptoms* of a simple fracture are, swelling, pain and generally unusual mobility of the part and deformity. If the bone affected is moved at the seat of injury, erepitation or the sound produced by the contact with each other of the broken fragments, may very often be heard. When it is near the wrist, or any other joint it may be very difficult to distinguish it from a sprain. There is always more or less shock. A compound fracture may prove fatal; but a simple one is usually not dangerous to life, unless it is seated in the skull.

In *treating* a fracture the main consideration is, the retention of the bone in its natural shape and position. This object is attained through the use of suitable splints and bandages. Bony union is complete in from two to eight weeks. The younger and healthier the patient is, the sooner does it occur. Of course, a small bone becomes healed faster than a large one. The bond of union is at first very soft; it is gelatinous. Little pain is experienced generally while it is forming. Later, there may be a disagreeable aching for several weeks.

Compound fractures are always serious in nature; and if they are at the same time comminuted, amputation is often indicated.

No one except a surgeon should undertake to treat a fracture. Until one arrives the part should be kept perfectly still; and cold water may be applied to it. If an extremity is the seat of the injury, keeping it stretched well, by dragging on it freely, will prevent the cutting pain which the edges of the broken bone cause when they press on the surrounding tissues. This fact should be carefully borne in mind.

There need not usually be any haste about the setting of a broken bone; for the fragments may be pressed into their natural position many days after the occurrence of the injury.

Of fractures it is proper to say that however well they may be treated, more or less deformity is not infrequently left. This is particularly apt to be the case when they are seated near joints. A slight shortening is a common result of one in a lower extremity, especially if near the head of the thigh-bone.

POISONING.

Any soluble substance which on being introduced into the system is capable of destroying life is a poison. Hence an insoluble substance which may produce death through mechanical action is not one. Poisons of an irritant character, however, act to some extent mechanically. All unwholesome articles of diet are more or less poisonous.

Cases of poisoning are not uncommon; and a considerable number of them terminate fatally. There are from fifteen to twenty deaths imputed to it yearly in Philadelphia, of which about a fourth are of minors.

Great care should be exercised not to have poisonous agents where children may reach them. Bottles of medicine and packages containing substances known to be noxious should always be placed under lock and key.

Some poisons prove fatal through their local action, their action on the gullet and stomach. Strong acids are of this class. Soluble agents which are not corrosive do not prove fatal, unless they are absorbed; and their effects are produced on different parts of the system. Therefore, in poisoning from any of these it is the amount absorbed and not the amount present in the stomach which gives rise to the symptoms.

When a person gets poisoned there is usually need for immediate action; for if the treatment is not promptly instituted it is not apt to be of much avail. Consequently it is very desirable that every one should know what to do under the circumstances; but a physician should always be summoned as speedily as possible.

To remove the substance from the stomach is the first and most important step to take in nearly every case of poisoning. When anything which there is any ground for believing to be noxious is swallowed, let vomiting be produced without delay. Salt and water, mustard and water, or the syrup, or wine of ipecac., may be used as an emetic. Tickling the throat inside with the finger, or a feather will generally cause the stomach to turn. The use of a stomach-pump may as well not be thought of for a moment; because it is extremely unlikely that one can be found and put in action soon enough to be of service.

In some cases of poisoning, ANTIDOTES may be made use of to advantage. By antidotes are meant agents which are capable of counteracting the noxious effects of poisons. Some of them act mechanically, some chemically and some physiologically. The mechanical ones act by protecting the stomach, or by preventing absorption, in a measure. The white of eggs, oils and fluids generally are such; and they are of great service in poisoning from acids and other corrosive substances. Chemical ones act by neutralizing or changing the nature of poisonous substances. Lime and other alkaline agents are such, and they are very useful, especially in cases of poisoning from acids. Physiological ones act by producing effects on the system the opposite of those produced by certain poisons. Coffee and other stimulants may be classed as such, when given in cases of poisoning from laudanum, or any narcotic.

I will now say a few words about certain poisons and their effects and the treatment of poisoning from them.

ACIDS, such as oil of vitriol (sulphuric acid) and aqua-fortis (nitric acid) destroy life through their corrosive properties. When swallowed they char the parts with which they come into contact and profoundly shock the system. After the charring inflammation sets in; but if the stomach is seriously injured death is apt to occur speedily.

A solution of any alkaline agent such as lime, or soda, serves as a chemical antidote for any of these poisons. Soap answers very well. But in a case of poisoning from any strong acid let plenty of water, oil, or any innocent liquid which is at hand be given instantly. Vomiting generally occurs of itself. It is mostly unwise to resort to measures to excite it, on account of the condition of the stomach. The after treatment consists of the use of such remedies as will allay inflammation. The solution of morphia, or some other sedative is indicated. Milk, or any bland drink may be given. A mustard-plaster applied over the stomach is often serviceable.

ALCOHOL is a moderately active poison. The effects of it on the system are described elsewhere. Whisky, gin, brandy, or any liquor which contains much of it is capable of destroying life.

If a poisonous amount of any alcoholic liquor is known to have been taken vomiting should be produced at once. If the patient has become insensible let him inhale the vapor of ammonia; and a little cold water may be dashed over him occasionally. A mustard-plaster may be applied to the spine. If he can swallow, strong coffee should be given freely, as it will tend to arouse him.

AMMONIA, when taken in large amount, produces inflammation of the stomach. The chemical antidote for it is vinegar, but water should always be given as soon as possible, so as to render it less corrosive.

ARSENIC is an extremely poisonous substance. Arsenious acid or ratsbane is the preparation of it which is most apt to be used. It is a white powder. The effects produced by it begin to appear in from ten to twenty minutes. At first there is distress at the stomach and thirst. Soon, vomiting and purging appear with severe cramps in the bowels and other parts of the body. Later, prostration becomes marked.

In any case of poisoning from this agent, an emetic should be given immediately, unless vomiting is occurring to a sufficient extent. Milk, the white of eggs, and oil either alone or with lime-water are each of service. There is a chemical antidote for it (hydrated oxide of iron), but it is seldom possible to obtain it in time to do much good. The after treatment required is similar to that recommended in poisoning from acids.

CORROSIVE SUBLIMATE is the bichloride of mercury, and it is a powerful corrosive poison. It is the active ingredient in most of the solutions used to destroy bed-bugs.

The white of eggs, or a mixture of flour and water serves as a mechanical antidote to this poison. Vomiting is one of the effects of it; but if it does not occur freely it may be well to give an emetic. The after treatment is similar to that recommended for poisoning from acids.

LAUDANUM destroys life by producing insensibility and exhaustion. Aromatic spirits of ammonia, an alcoholic liquor, or any stimulant, acts to some extent as a physiological antidote to it. Strong coffee may be used. Vomiting should always be produced at once, if possible. Efforts must be made to prevent the patient from sleeping as long as it is believed that danger exists. A little cold water may be dashed on the face and other parts of the body occasionally; and mustard-plasters may be applied to the spine and elsewhere.

All preparations of opium, or its active principle, morphia, destroy life in the same way as laudanum, and poisoning from them calls for similar treatment.

MEATS of all kinds, when diseased, or in a decaying state, are somewhat poisonous. Moulded sausages have caused many deaths. Disturbance of the stomach and prostration are the leading effects produced by them.

In poisoning from meat of any kind, the use of aromatic spirits of ammonia, whisky, or some other stimulant is indi-

cated. If it is believed that there is any of the agent in the stomach let an emetic be given, and immediately afterward, a dose of any active cathartic.

MUSHROOMS, or rather some varieties of them, are somewhat poisonous. Those that are colorless are generally regarded as wholesome. All that are colored should be viewed with suspicion. The effects produced by poisonous varieties are like those produced by decayed meats and the remedies indicated are similar.

SOOTHING SYRUPS contain opium, as a rule, and the symptoms produced by them when taken in large amount are like those produced by laudanum, and the remedies indicated are similar. Many infants are destroyed suddenly as well as gradually by these villainous compounds.

STRAMONIUM or JAMESTOWN-WEED or THORN-APPLE is found in waste places in most parts of the United States. It is an active narcotic poison; but before insensibility is produced there is great mental excitement. Children should be cautioned against smoking the leaves, or eating the seeds of it. The remedies suitable for poisoning from it are essentially the same as those recommended for that produced by laudanum.

TOBACCO is a powerful acrid narcotic. Any one not accustomed to the use of it may be seriously affected by smoking, or chewing it. If used in large amount, in any way, it will destroy life. The symptoms produced by it are, giddiness, vomiting and general prostration. There is no chemical antidote for it. To counteract its effects stimulants may be given and mustard-plasters may be applied to the spine and elsewhere.

PART II.

THE CULTURE OF CHILDREN.

SECTION I.

PHYSICAL CULTURE.

CHAPTER I.

THE PHYSICAL CONDITION AT DIFFERENT AGES.

Preliminary Remarks—The Height at Different Ages—The Weight at Different Ages—On the Rate of Increase in Height and Weight and the Ratio of the Latter to the Former at Different Ages—Relations of Sex, Race and other Circumstances to the Height and Weight, the Rate of Increase of these and the Ratio of the Latter to the Former, at Different Ages.

PRELIMINARY REMARKS.

In the first part of this book the physical culture of children is treated of in a general way. But this is not enough ; there are many features of the art, of a directly personal character, which merit special consideration. Of some of these, together with miscellaneous matters pertaining to the special senses, it is my purpose to speak in this and succeeding chapters.

The possibility of improving the physical condition of children has been dwelt on sufficiently elsewhere.

That efforts should be made to render every one as perfect as possible physically is so evident as to call for no argument. The whole animal mechanism should be freed from faults, if their removal be within human power.

It is necessary to have a criterion or standard by which to judge of the physical condition of a child, at any particular age; but it is impossible to find a very satisfactory one.

Doubtless, all children should be in every respect like the very best among them, of the same age, sex and race. This, however, cannot be expected to be the case; but, to be sure, it is proper to at least wish to have all as faultless as possible.

The right standard, perhaps, by which to form an idea of the condition of a child is found in that of the average of a large number of others. Those who are not up to it are usually in urgent need of intelligent care.

In studying the physical condition of children the height and weight and the rate of increase of these at different periods from birth forward merit particular attention. To these and related points I will, at any rate, devote the rest of this chapter.

THE HEIGHT AT DIFFERENT AGES.

The height of children of the Anglo-Saxon race, at birth, averages about eighteen inches. At the end of the first year it is about twenty-six inches; at the end of the second, thirty; at the end of the third, thirty-three and a half; at the end of the fourth, thirty-six and a half; and at the end of the fifth, thirty-nine. At each of these periods, males average about an inch more than females.

In the year 1875 the Board of Health of the State of Massachusetts, under the lead of Dr. Bowditch, undertook to determine the rate of growth of children of different ages, and to do this measured nearly twenty-five thousand of those

in the schools of Boston. The Report of this laborious investigation furnishes us with accurate statistics of the height of children at each year of age, between five and eighteen, with the place of birth of the parents of the same. The following table, which I have compiled from it, gives the average height (without shoes) in inches of children of either sex according to age, regardless of the place of birth of their parents, and also of those of American, those of Irish and those of German parentage:—

Age at last birth-day.	Without regard to place of birth of parents.		American parent-age.		Irish parentage.		German parentage.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
5	41.57	41.29	41.74	41.47	41.59	41.18	41.08	41.40
6	43.75	43.35	44.10	43.66	43.74	43.29	43.50	43.09
7	45.74	45.52	46.21	45.94	45.61	45.45	45.25	44.91
8	47.76	47.58	48.16	48.07	47.72	47.39	47.13	47.15
9	49.69	49.37	50.09	49.61	49.53	49.27	48.85	49.20
10	51.68	51.34	52.21	51.78	51.57	51.20	51.21	50.76
11	53.33	53.42	54.01	53.79	53.10	53.13	52.92	52.62
12	55.11	55.88	55.78	57.16	54.82	55.41	54.55	54.73
13	57.21	58.16	58.17	58.75	56.70	57.64	56.70	57.82
14	59.88	59.94	61.08	60.32	58.88	59.67	59.14	58.55
15	62.30	61.10	62.96	61.39	61.15	60.47	62.06	
16	65.00	61.59	65.58	61.72	64.09	61.05		
17	66.16	61.92	66.29	61.99	all 17, 18=	all 17, 18=	all 16-18=	59.81
18	66.66	61.95	66.76	62.01	66.20	62.00	64.75	

THE WEIGHT AT DIFFERENT AGES.

The weight of Anglo-Saxon children, at birth, averages about seven and a half pounds. At the end of the first six months it is about fifteen pounds; at the end of the first year, twenty; at the end of the second, twenty-six; at the end of the third, thirty-one; at the end of the fourth thirty-five; and at the end of the fifth, thirty-nine. At each of these periods males are about a pound heavier than females.

(Note.—Unfortunately there are no reliable statistics of the average heights and weights of children at different ages under five years.)

From the Report of the Massachusetts investigation, spoken of above, I have compiled the following table, which gives the average weight (in ordinary dress), in pounds, of children of either sex, according to age, regardless of the place of birth of their parents, and also of those of American, those of Irish, and those of German parentage:—

Age at last birth-day.	Without regard to place of birth of parents.		American parent-age.		Irish parentage.		German parentage.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
5	41.09	39.66	41.20	39.82	41.33	39.63	40.57	39.73
6	45.17	43.28	45.14	43.81	45.25	43.21	44.09	42.68
7	49.07	47.46	49.47	48.02	48.90	47.64	49.12	46.26
8	53.92	52.04	54.43	52.93	54.12	51.80	52.94	50.60
9	59.23	57.07	59.97	57.52	58.92	56.76	58.25	57.37
10	65.30	62.35	66.62	64.09	64.99	61.59	63.93	59.83
11	70.18	68.84	72.39	70.26	69.60	67.83	69.09	67.56
12	76.92	78.31	79.82	81.35	75.70	76.15	75.70	76.06
13	84.84	88.65	88.26	91.18	82.84	85.76	83.85	85.82
14	94.91	98.43	99.28	100.32	91.19	96.36	92.87	88.91
15	107.10	106.08	110.84	108.42	101.21	100.46	107.53	
16	121.10	112.03	123.67	112.97	112.88	108.56		all 15-17=
17	127.49	115.53	128.72	115.84	all 17, 18=	all 17, 18=	all 16-18=	101.16
18	132.55	115.16	132.71	115.80	127.40	115.82	123.67	

In this table as in the one given above the reader will observe that the ages given are those of the children at their last birth-day; and hence each is half a year less than it should be. Thus five and a half years is the age of the boys whose average height is 41.57 inches, and whose weight is 41.09 pounds.

As will be observed there is no allowance made for the clothing in the average weights of children given in the table of the latter. It was determined by Dr. Bowditch that the clothing of boys on the average is equal to eight, and of girls six and eight-tenths per cent. of their gross weight at each period specified. Thus the weight of it in males of five (really five and a half) years is 3.28, and in females of the same age 2.69 pounds.

ON THE RATE OF INCREASE IN HEIGHT AND WEIGHT
AND THE RATIO OF THE LATTER TO THE
FORMER AT DIFFERENT AGES.

From the two tables given above it is easy for the reader to determine the average rate of increase of height and of weight per year and the ratio of the weight to the height. Thus from five to six (really five and a half to six and a half) years of age, boys increase 2.18 inches in height, and 4.08 pounds in weight and at five (really five and a half) years the ratio of the weight to the height is .988 of a pound per inch. All these are points which should be carefully studied by those in charge of the young. A marked divergence from the average increase in height or weight indicates that the system is not in a desirable state; and a marked divergence from the average ratio of the weight to the height is of similar import. This last matter is particularly deserving of attention. The significance of it is dwelt on in an address delivered a few months ago before the Harveian Society of London by Dr. Percy Boulton, the substance of which I cannot refrain from giving here. The Doctor said that during the period of growth the scales and measures used systematically render arrested growth at once evident, and this is a certain forerunner of disease. The age standard is most fallacious, and the only trustworthy measure of healthy development is weight for height. The reason for this is, that perfectly healthy children grow at different rates per annum, which accounts for different adult heights among perfectly healthy people. Two inches a year is the lowest rate between three and five feet which is consistent with typical development; so that any child growing less than two inches a year should be looked upon as suffering from some drawback to healthy development, which if discovered, is probably removable. The most common causes are unsuitable, or insufficient food, overwork, mental, or bodily, want of rest, etc. Few children

grow more than three inches a year, and such require careful watching, as it is a rate of growth scarcely consistent with safety. Those growing over three inches a year require more food and rest. They are easily fatigued and should not therefore be allowed to take violent exertion of any kind. Two, two and a half, and three inches a year may be taken as the normal rates of growth of healthy children with suitable surroundings. The first prognosticates short, the second medium and the third tall adult stature. Growth should be regular, and not by fits and starts; and hence the child that grows two inches a year is about five feet at fifteen years, whereas the child that grows three inches a year is five feet at ten, or eleven. Variation in the rate of growth explains perfectly differences in height and at the same time shows the fallacy of the age standard. Weight for height in all cases should be the same. Compared with a standard of weight for height drawn from an examination of healthy children, it is found that those who always weigh seven pounds below it have no capital to draw on, and consequently succumb easily to disease. It should be our aim to keep children up to the standard.

**RELATIONS OF SEX, RACE AND OTHER CIRCUMSTANCES
TO THE HEIGHT AND WEIGHT, THE RATE OF IN-
CREASE OF THESE AND THE RATIO OF THE LATTER
TO THE FORMER, AT DIFFERENT AGES.**

On examining the figures of the height and weight of the children of Boston it is seen that their growth takes place in such a way that up to the age of eleven, or twelve boys are both taller and heavier than girls. At this period girls begin to grow very rapidly and for the two, or three years succeeding surpass boys in both height and weight. Boys then become larger than girls. The latter, indeed, have now, that is, when at, or about their fifteenth birth-day, nearly reached their full size.

As to the relation of weight to height in children of either sex it appears that at heights of less than fifty-eight inches boys are heavier than girls in proportion to their stature; but at heights beyond fifty-eight inches the reverse is true.

In regard to the proportions of children of native and of foreign-born parents it is evident that those of the former are taller and heavier than those of the latter. This would seem to depend partly on the social condition and the way in which they have been brought up and partly on differences of race, or stock.

Besides the race, the social condition and the way of bringing up, the climate, the season of the year, the diseases suffered from and various other circumstances influence more or less the growth of children; but I need not dwell on these matters. I may say, however, that the warmer the climate is the more quickly does growth proceed, that summer is more promotive of it than winter, and that all debilitating diseases retard it.

CHAPTER II.

THE MUSCULAR SYSTEM.

Preliminary Remarks—Exercise, and the Muscular System—On Harmony in the State of the Muscles—On Bodily Straightness—On Systematic Exercising—Walking as a Form of Exercise—Sports as Forms of Exercise—Work as a Form of Exercise—Calisthenic Exercises—Gymnastic Exercises—On Competitive Exercising—Exercise and the Time of Day.

PRELIMINARY REMARKS.

A muscle is a band of tissue possessed of contractility or the power of becoming shorter for a time when stimulated. The lean part of meat or flesh is made up mostly of muscles. Some muscles, however, are not like the lean part of meat; they do not consist of reddish, rough fibres, but of pale, smooth ones. These are not responsive to the will and are consequently designated as involuntary, while the others are responsive to the will and are consequently designated as voluntary. But the muscular tissue of the heart and certain other parts which are not directly under the control of the will, is very similar to that of voluntary muscles in general.

Each voluntary muscle is attached, as a rule, at either end to a bone. Near the point of attachment it is apt to be thinner than elsewhere; and this part is called a TENDON or SINEW.

There are over five hundred muscles in the body. Some of them are very small.

The muscles in acting produce motion; and they act mechanically, just like the cords of a pulley. Thus it is through the contraction or shortening of the muscle which runs from

the shoulder down to the larger bone of the forearm, and which is called the biceps, that the arm is flexed at the elbow. Desiring to produce this movement, force is directed from the brain by the will and passing along the nerves toward the muscle in question stimulates it so that it contracts.

EXERCISE, AND THE MUSCULAR SYSTEM.

Besides rendering the muscles subtle and responsive to the will, exercise keeps them not only large but both strong and durable. If allowed to remain still they soon become small and feeble and do not respond readily to the will. Hence it is possible to change their condition, in a measure, as may be desired. And in exercising them let it be distinctly understood that all the other tissues are affected; by moving the parts of the body which are subject to the will all the others act more energetically. Efforts to invigorate the muscles result in the invigoration of the whole system.

ON HARMONY IN THE STATE OF THE MUSCLES.

The muscles of the body should be in a harmonious state, as regards size and strength. Those of the arms should not be out of proportion in force with those of the lower extremities. When those of one side are more powerful than those of the other a curvature, or some other sort of deformity will at least tend to develop.

The percentage of persons who are in a harmonious condition muscularly is small; or as Armstrong puts it—

“ Few bodies are of that happy mould
But some one part is weaker than the rest;
The legs, perhaps, or arms refuse their load,
Or the chest labors.”

ON BODILY STRAIGHTNESS.

That the body should be kept straight and be subjected regularly to a certain amount of exercise are the two cardinal

facts pertaining to physical culture which every one should especially bear in mind. A bent posture should be avoided because it interferes with the breathing. The lungs cannot be filled completely at each inspiration, if the chest is not thrown well forward; and when this is the case the blood fails to be properly purified. Another reason why the bent posture should be avoided is because it interferes with the circulation of the blood. When a body is bent, or in a constrained position, some blood-vessels are pressed upon, and consequently the current of blood within them is more or less obstructed. Evidently, then, the straight posture is the most favorable to health.

But a straight condition of the body is not only the most consistent with health but with perfection of form. Stooping shoulders have always been accounted ugly. Of course, I do not mean to convey the idea that the figure, when erect, should be absolutely straight. In my work, "The Culture of Beauty," it is said: "If the figure is what it should be, the line of the spine is straight, or, in other words, there is no lateral curvature. A deformity of this kind is very ugly, uglier if possible, than a bend forward. Alexander the Great was not as beautiful as Richard the Third. In an adult a straight spine, antero-posteriorly, with the head balanced on it at right angles, is extremely unattractive. As remarked by Fau and Knox, in their work on artistic anatomy, 'in the infant the spine is straight, and when a person grows up with this form it presents the oddest sight in the world.' Viewed in profile, the back ought to have four gentle curves, but the nape of the neck, the spine at the waist and the heels should be in a perpendicular line."

Crookedness of the figure may be inherited to a great degree but it is acquired largely in most cases. A habit of curving the body forward when sitting is easily formed and if it is long continued it will certainly produce lasting

deformity. Many children while at school become thus disfigured.

Lateral curvature is not infrequently due to the posture assumed in sleeping. When the head and shoulders are placed on a high pillow, the spine is necessarily forced out of line.

From what has been said the reader can infer how crookedness can be prevented. When the condition is present there are various means which may be resorted to for its removal. As I have remarked in the work quoted from above, "the daily use of dumb-bells, or carrying some rather heavy object on the head fifteen, or twenty minutes, morning and evening will tend greatly toward producing the desired result. In parts of Spain, Italy, Egypt, India and other Oriental countries where young girls especially are in the habit of carrying water-urns on their heads, their beautiful figures and graceful movements are the admiration of all intelligent travelers. Shoulder-braces, like braces for the limbs are useful; and where there is serious spinal disease threatening, timely support of some kind may avert it, or at least prevent great deformity." It need scarcely be added that exercises in general are of value.

ON SYSTEMATIC EXERCISING.

As has been already stated it is a truth which should never be forgotten, that a certain amount of exercise should be had day after day from infancy forward. Disregarding it is undoubtedly the cause of a vast amount of the debility, suffering and allied evils with which people are afflicted. The *Spectator* very correctly observes of exercise that it is "the best kind of physic for mending a bad constitution and preserving a good one."

Now, it is important that exercise should be taken more or less systematically throughout life. Indulging in it by fits

and starts is not likely to be advantageous. One must continue taking it month after month as long as life lasts, in order to retain strength, elasticity and durability. Because one subjected himself to a course of systematic physical training years ago is no reason why he should expect to be vigorous now without moving scarcely at all. It is, of course, very well, indeed it is highly desirable to exercise much in childhood and youth, but it is only a very little less desirable at every other period of life.

In regard to the kind of exercise which one should take, it may be said that it does not matter in the least, so long as it calls gently into action the muscles of the body. Some forms of it, to be sure, are preferable to others under certain circumstances, but it is because they bring about the movement of particular parts better and not because they are possessed of any special virtues. Hence, all other things being equal, the simpler an exercise is the more highly should it be esteemed.

It is extremely desirable that the proper amount of exercise should be received without having to go about getting it purposely. If possible, it should be received in the pursuit of pleasure, or business; for if it is not received incidentally there is great reason to fear that it will not be received long, or regularly. I repeat, that, if possible, the proper amount of exercise should be received every day incidentally in the pursuit of pleasure, or business. This would appear to be a common-sense maxim; but nevertheless it does not seem to come home to many minds.

Turning exercise-getting into a labor is seldom otherwise than foolish. How irrational it is to have boys and girls conveyed to school in a carriage and then sent into a close room to get exercise of some sort! And equally irrational is it to force children to indulge in certain set exercises while they are longing to be at some active sport.

The young can generally be induced to take enough

exercise through play ; but if it is thought proper, attention to a particular duty, the performance of which necessitates the taking of a certain amount of exercise should be exacted. Thus if it is believed to be wise that a boy should walk four miles every day let him attend a school which is two miles distant.

Coming now to the subject of the ways in which the different parts of the body may be exercised I will first speak of walking.

WALKING AS A FORM OF EXERCISE.

I have elsewhere spoken of walking and have there remarked that it is the best of all exercises, because it calls into play in a gentle way almost all the muscles of the body. This statement will bear the strictest criticism. It is possible, however, to walk in such a manner that the muscles from the waist upward are not brought into action, to any extent. But this need not be the case, and will not be, if one walks properly. In walking easily and gracefully the arms are allowed to swing a little.

Now, it has been estimated that in order to keep the body in a healthy state, to maintain the vigor at par it is necessary to walk about eight miles, or to take an equivalent amount of exercise daily. This is what is required by an adult male. Less suffices for an adult female. Except for small boys and girls it is not a great deal too much for the immature. These remarks should certainly be somewhat startling to many ; for there are multitudes who expect to be healthy, without taking the equivalent in exercise of a two-mile walk. Nor am I exceptional in the amount of exercise which I advise. On this important subject Dr. George Wilson says, "Extended experience and numerous experiments both agree in laying it down as a rule that the amount of exercise required by a man of average height and weight is equivalent to a daily walk of eight, or nine miles along a level road. This rule, of course,

only applies to a man in the prime of life. For young lads, or women, who by the way are rated as physically equal to lads of sixteen, the amount of exercise required would be somewhat less. But while growing lads, when under favorable circumstances, as a rule, take more than their allotted amount of exercise, it is notorious that the majority of men, if we exclude those employed at active out-of-door labor, take nothing like that amount, and women take still less; and this neglect of exercise is a most fruitful source of ill-health among both sexes, but especially among the latter. Of course, the ordinary avocations of life may reduce the eight or nine miles' walk very considerably, or in respect to some out-door employments it may be dispensed with altogether; but to those whose employment is sedentary, or inactive this amount of exercise in some shape is indispensably necessary. It may be varied in many ways and the more the better; but for the most part it should always be taken in the open air."

I need hardly say that a person who has not been in the habit of exercising regularly and freely and consequently is below par in vigor should not take an eight-mile walk; for it will cause fatigue, and exercise carried to the point of fatigue is harmful. No one can by an effort of the will bring at once the strength and tone of typical health to his muscles.

SPORTS AS FORMS OF EXERCISE.

The various sports are treated of elsewhere; so it is unnecessary to say anything of them individually in this place. As sources of exercise they are all, of course, somewhat alike; but some of them are better adapted than others for special cases. Thus for a person who desires particularly to strengthen the muscles, from the waist upward, rowing, or ball-playing should be regarded with special favor. The majority of sports, indeed, afford exercise chiefly to the muscles which lie below the waist.

WORK AS A FORM OF EXERCISE.

Nobody needs to be told, probably, that work yields exercise to the muscles. But some kinds of it require very little activity, and are therefore of scarcely any value as exercises. Thus writing, or sewing does not bring into action any part of the body save the right arm. Digging, hoeing and other forms of labor required in a garden afford plenty of exercise to all the muscles and may be done by boys and girls greatly to their advantage. Indeed, farm-work in general is an admirable means of physical culture. There is no better way to invigorate a delicate city-boy, and make him sensible too, than to send him into the country and let him take part in all that is going on there.

CALISTHENIC EXERCISES.

What are called calisthenic exercises are now practiced to a considerable extent in schools. They are simply a series of gentle motions of the different parts of the body, made mostly without the use of any instruments, except, perhaps, a light object to hold in the hand. Thus by flexing, extending and otherwise moving the arm the different muscles of it are called into play and the movements may be repeated any number of times. It is unnecessary to follow any particular plan in the acts; but it is to some extent advisable to do so. Special care should be taken to throw the chest well forward and breathe deeply.

Now, it may be said of this method of exercising that it is of great value, if persevered in earnestly and for a considerable length of time every day. Practicing it in a perfunctory manner for a few minutes every morning is not of much account, save that it favors the acquirement of an erect and graceful carriage. It may not be amiss to observe that it would be wrong to think it of little use because it does not call for much exertion. Like other methods of exercising it

is of value not alone because it serves to enlarge and strengthen the muscles and increase their subtileness and staying power ; for it promotes and regulates the various functional activities of the body. The breathing may be greatly improved by it.

GYMNASTIC EXERCISES.

Gymnastic exercises or more or less systematized energetic movements made generally through the use of instruments of various kinds are powerful means of physical culture. A horizontal pole, two parallel bars, a vertical pole, a wooden horse, an inclined ladder, and a trapeze are among the instruments used and the movements made through them may be varied indefinitely. Dumb-bells, or Indian clubs varying in weight from one to many pounds are also used extensively. The latter are of value mainly to strengthen the muscles which lie above the waist.

Of gymnastic exercises it may be said that if practiced regularly and care be taken not to strain any part of the body, they are of great service to the young of either sex. Under a competent teacher a course extending over several months in a well-furnished gymnasium is of much advantage to any boy, or girl.

It would be well if there were a gymnasium in connection with every school in the land, in which the pupils should spend a certain time every day in such a way as would best subserve the physical welfare of each. And the exercises should be presented largely in the light of sports, so that they should not be distasteful, for as Armstrong says—

“ The toil you hate

Fatigues you soon, and scarce imbues your limbs.”

The peculiar gymnasia called “TURNER-SCHOOLS” in which children are subjected to a system of physical education are well appreciated by those of our population that are of German extraction. They are generally conducted with both sense

and enthusiasm and are of great use, especially in the large cities. To Friedrich Ludwig Jahn, or "Father Jahn," as he is popularly called, a German who was born in 1778 and died in 1852, belongs the credit of instituting and popularizing them in his native country.

ON COMPETITIVE EXERCISING.

Of late years the young and particularly those at college have been resorting extensively to competitive exercising or trials of physical power. Boat-racing is, perhaps, the favorite medium of this practice. That it is to the advantage of students to spend much time in preparing for set muscular contests may be denied ; but at any rate for them to indulge in straining efforts is certainly wrong. This is the abuse of physical culture and it is to be severely condemned.

EXERCISE AND THE TIME OF DAY.

As to the period of the day in which to take exercise I would say that except for an hour, or so after eating there is not much room for choice. The reason why it is not advisable to exert one's self greatly after a meal is because it will interfere with the process of digestion.

CHAPTER III.

THE SENSE OF TOUCH.

Nearly all parts of the body are possessed of sensibility or feeling. The tongue, lips, tips of the fingers and, indeed, the entire skin are particularly sensitive to impressions. In the extremity of the third finger and the tip of the tongue this peculiar power is most acute. The hand, however, from being movable at will is the part chiefly used in touching, and consequently it may, in a manner, be regarded as THE ORGAN OF TOUCH.

All other things being equal, the more surface of the body impressed the more intense is the impression. Thus warm water seems warmer on dipping the hand than only a finger into it.

As with the other senses the law of contrast holds in respect to this one. After exposing the hand, or the whole body to a high temperature, a degree of temperature a little lower, and which under other circumstances would seem warm, produces the sensation of cold; while after exposure to a low temperature any increase of temperature produces a sensation of warmth. Again a degree of pain which under ordinary circumstances would be hard to bear seems slight, after having experienced severe suffering. More will be said on this and the preceding point elsewhere.

The distinctness and intensity of a sensation in the nerves of touch depend greatly on the attention given to it. Pain becomes more intolerable the more intently it is thought of; and pleasure is increased by noting it well. The sensations produced in each of the senses, and in fact, everywhere are similarly heightened by casting the mind on them. This is

greatly furthered by keeping as well as possible only one sense at play. The late Dr. Hosack of New York was fully aware of this ; for he writes, "A good rule in feeling the pulse is to concentrate one's sensations in the fingers. This is done by closing the eyes and thereby excluding impressions received by the other senses. Noise, or even music at our meals we well know impairs, if it does not destroy the sense of taste. So does a variety of objects upon the eye diminish and divert the sense of feeling."

By the sense of touch, the size, form and other external features of bodies may be recognized. Through it also the pressure, or resistance is perceived, in a measure. It would seem, however, that the position and degree of contraction of the muscles have much to do in determining the force, or weight of objects. Indeed, there appears to be what has been called THE MUSCULAR SENSE. But it is probable that the idea of weight, or pressure in moving bodies, or in resisting forces may at least in part spring from a consciousness of the amount of nervous energy transmitted from the brain, rather than from a sensation in the muscles themselves. To any one who attempts to raise a weight which is less, or more than expected this will be evident.

CHAPTER IV.

THE SENSE OF TASTE.

The sense of taste is seated in the tongue and adjacent parts, all of which are also possessed of common sensibility. It is in the upper surface of the tongue that it is most acute. There are special nerves on which it depends; and these are so distributed that in eating the food comes into contact with them, and thus arouses sensation in them. It is probably not always necessary, however, for the substance to come into actual contact with the nerves in order that its taste may be recognized. For the nerves of taste, like those of other special senses, may doubtless have their peculiar properties excited by various other kinds of irritation, such as mechanical impressions and electricity.

Unless a substance is in solution, or soluble in the fluids of the mouth, its taste cannot be recognized; it will excite sensations of touch merely. To taste well it is necessary that the surface of the tongue and other parts in which the sense is seated, be moist.

Between this sense and that of smell there is a close relation. Wines and many other articles cannot be properly appreciated unless the latter is in a healthy condition.

An important object of this sense is, to make eating pleasurable, and hence increase the desire to supply food to the body. This use of it is liable to be greatly abused. Pandering to it is very common. In fact, the indulgence of it is the chief aim of what may be called advanced cookery.

Another object of this sense is to guard against the use of unwholesome food. Disagreeable articles are, as a rule, harmful. But the sensations produced by these and all others are

modified greatly by hunger and habit. A good appetite is very improving to the taste of everything eatable. Habit not only blunts the sense but perverts it. Thus it is possible by habitually using that nauseous weed, tobacco, to generate a positive liking for it.

Variety is very favorable to the acuteness of this sense. By tasting different things the ability to distinguish the taste of each is increased. On this point Dr. Rush writes, "The richest viands, even venison, turtle and salmon, so delicious to the taste of an epicure, become not only insipid but nauseous, if eaten daily for two, or three weeks. Aliments of but little stimulus seldom pall the appetite. Hence the pleasure with which we eat beef, mutton and bread all the days of our lives. They are to the tongue what green is to the eyes." But the ability to clearly perceive the taste of anything may be greatly lessened by tasting certain other things immediately before; and this is due to the fact that sensations of taste may last for some time after the substances which excited them have ceased to act. This matter has an important bearing on the pleasure derivable from eating different articles of diet in succession. Thus, the use of a sweet article before wine spoils the flavor of the latter, while the use of cheese has a reverse effect. The harmony of tastes is therefore a subject deserving of study.

CHAPTER V.

THE ORGAN AND SENSE OF SMELL.

*The Organ of Smell—The Sense of Smell—Nasal Discharges
—On Objects in the Nose and their Removal.*

THE ORGAN OF SMELL.

The nose is the organ of smell. It consists essentially of two distinct cavities or nostrils which are similar to each other in all respects. Either nostril communicates with the throat, and several small chambers open into it. A little passage for the tears (the lachrymal duct) exists between it and the eye on either side. That it is possible to reach the brain through the organ is an error. In it are distributed two large nerves (the olfactory) on which the power to recognize odors depends.

THE SENSE OF SMELL.

To produce the sensation of smell the particles of matter must come into contact, or almost so with the olfactory nerves.

This sense is the source of much pleasure. The sweet odors of the myriads of flowers which bedeck the earth yield through its sensations at once agreeable and harmless. But it serves not alone to minister to our delights; it has a useful purpose: through it warning is given of the presence of noxious matter. And it is the part of wisdom to heed the information given by it. Most, if not all disagreeable smells are injurious; and the sources from which they emanate should be shunned. Bad-smelling articles of diet are unwholesome as a rule, and air which excites unpleasant sensations in the nose is very certain to induce deleterious effects on the system when it is taken into the lungs.

The presence of any odor, if continued long, blunts this sense. Those who live constantly in a foul atmosphere become unaware of it in time. This is a fact of great significance.

NASAL DISCHARGES.

Discharges of different kinds are very liable to come from the nose. They are secreted in its lining. Naturally there should ordinarily be very little of any kind. When a large amount of mucous matter comes from it, the membrane of it is evidently in an unhealthy condition. A child that is properly nourished and cared for should not be troubled with any nasal discharge, except, of course, when affected with coryza.

When foul-smelling matter comes from the nose there is diseased action progressing within it; the person is suffering from *OZENA*. The parts may become badly ulcerated. Generally only one nostril is affected. It is not uncommon among scrofulous children. A cure is not easily effected in many cases. Washing the organ thoroughly once, or twice a day with tepid water containing a little mild soap is the principal local remedy. This is done by means of a tube attached to the vessel which contains the liquid and which should be placed somewhat higher than the head. Measures to improve the general health are in order. The syrup of the iodide of iron is often of service.

ON OBJECTS IN THE NOSE AND THEIR REMOVAL.

Putting a button, pea, bean, or some other object into the nose is not an uncommon thing for a child to do. Seldom, or never, is there occasion for alarm. The object cannot pass into any place where it will endanger life; and it can usually be removed without a great deal of difficulty. It may generally be expelled by a forcible expiration, while pressure is made on the free nostril and the mouth is kept shut. If it cannot be removed in this way, a probe must be used.

CHAPTER VI.

THE ORGAN AND SENSE OF HEARING.

The Organ of Hearing—How Hearing Takes Place—On the Care of the Ear—On Objects in the Ear and their Removal—Inflammation of the Ear—A Chronic Discharge from the Ear—Deafness.

THE ORGAN OF HEARING.

Sound is made to impinge on the nerve of hearing (the auditory) by means of the ear. This mechanism is very complex. It may be described as consisting of three parts, the auricle, the tympanum and the labyrinth.

THE AURICLE or external ear is formed of cartilage and skin, and serves to direct the waves of sound into THE AUDITORY CANAL OR MEATUS, which is about an inch and a quarter in length in the adult. It cannot, as a rule, be moved through the influence of the will, as it can in many species of animals.

THE TYMPANUM or DRUM of the ear is an irregular-shaped cavity which lies between the auditory canal and the labyrinth. It has one outlet, a small duct to the upper and outer part of the throat, named after the first discoverer of it, an Italian physician, THE EUSTACHIAN TUBE. The partition between it and the auditory canal is called THE MEMBRANE OF THE TYMPANUM. By drawing the auricle a little upward and backward this membrane can be seen. It is oval in shape, and so thin as to be translucent. Within the tympanum there are three ossicles or little bones of irregular shape, the *malleus* or hammer, the *incus* or anvil, and the *stapes* or stirrup. These bones are bound together by ligaments; and three

muscles enable them to move slightly in certain directions. A process or projection of the malleus is attached to the membrane of the tympanum, and the end of the stapes is joined to the membranous covering of a small oval opening into the vestibule of the labyrinth (the *foramen ovale*). The tympanum is essentially a drum.

THE LABYRINTH or inner ear is the seat of hearing. It consists of three parts, the vestibule, the semicircular canals and the cochlea. THE VESTIBULE is the middle and main cavity. It is somewhat rounded in form, and measures about a fifth of an inch in diameter in all directions. Within it there is a membranous sheath on which filaments of the auditory nerve are spread. In the partition which separates it from the tympanum are two membrane-covered openings, one oval (the *foramen ovale*) and the other one rounded (the *foramen rotunda*). It usually contains two small crystals of carbonate of lime (otoliths). THE SEMICIRCULAR CANALS are three in number, and the diameter of each is about a twentieth of an inch. They spring like arches from the vestibule, and one end of each at its juncture is more dilated than the other. The enlarged end is called *the ampulla*. Each canal contains a membranous sheath, on which filaments of the auditory nerve are spread. THE COCHLEA is so called on account of its resemblance to the shell of a snail. The spiral of it has two and a half turns. On the partition which separates the passages of it are spread filaments of the auditory nerve. In each part of the labyrinth there is a fluid (the endolymph); and around the membranous sheath contained within the vestibule and the semicircular canals there is also one (the perilymph).

HOW HEARING TAKES PLACE.

On passing into the external ear waves of sound produced by speaking, or in any other way strike the membrane of the tympanum, which in consequence vibrates. The vibrations

of this membrane are conveyed by the chain of bones and the air within the tympanum to the two vibrating membranes which are in the external wall of the labyrinth; and the vibrations of these two membranes are communicated by the endolymph to the nerves of hearing, which are scattered through the vestibule, semicircular canals and cochlea.

ON THE CARE OF THE EAR.

The ears should be kept clean through the use of water and a little soap. From neglect of this the matter (cerumen) secreted in them may accumulate in such amount as to interfere greatly with hearing, until it is removed. The presence of dirt may irritate and inflame the parts. A syringe, or douche similar to that recommended for cleansing the nasal passages may sometimes be used to advantage.

Picking the ears with pins, or the like is a practice which should not be encouraged. It is generally a habit merely. Indulgence in it irritates the parts and causes cerumen to be secreted in greater abundance. Then, again, the pin, or whatever object is used may seriously injure the tympanum.

ON OBJECTS IN THE EAR AND THEIR REMOVAL.

Insects, grains of wheat and many other objects are liable to pass into the ear. None of them, however, can do much harm. On passing into it some insects cause a disagreeable buzzing for a little while. It is impossible for them to pass into the brain, as every one knows who has read what precedes.

Through the injection of a little tepid water with which some soap has been mixed it is generally easy to remove wax, or anything else which may be in the ear. To speedily destroy insects, a teaspoonful of oil of any kind may be poured into the passage. In removing large objects it is sometimes necessary to use a probe.

INFLAMMATION OF THE EAR.

Inflammation of the ear or OTITIS is not an uncommon affection. Serious attacks of it are generally caused by the extension of disease from the throat, as in some cases of scarlet fever. The pain is apt to be very great; and not only is the membrane of the tympanum likely to be destroyed, but the structure of the internal ear may be seriously injured. The discharge which occurs may continue for a long time.

The *treatment* called for by this affection consists of the application of cold freely, or a blister behind the ear. In place of the latter a mustard-plaster may be used. To allay pain equal parts of laudanum and oil should be poured into the passage repeatedly. An active cathartic may be of service. Should the trouble continue for a day, or two after using these remedies it is probable that matter is forming; and it is then proper to apply a poultice.

A CHRONIC DISCHARGE FROM THE EAR.

A chronic discharge from the ear or OTORRHOEA is common among children of feeble, scrofulous constitution. It usually springs from the tympanic membrane being in an ulcerated condition. The matter which comes away is cream-like in color and consistence and has a very offensive odor. There is seldom much pain. The hearing is more or less affected. The diseased action may extend into the internal parts of the ear and also to the membrane of the brain.

The *treatment* of this affection is often unsatisfactory. The remedies most required in nearly every case are, plenty of fresh air, exercise and good food. The syrup of the iodide of iron in small doses three times daily is often serviceable. Cleanliness is important. After each washing of the part it may be well smeared with a mixture of glycerine and a little carbolic acid.

DEAFNESS.

Deafness is due either to a defect in the auditory nerve or in the mechanism of the ear, or in both these. It may exist in any degree. Some are probably born in this condition. Such children as are badly affected from infancy cannot learn to speak and shall therefore be dumb as well as deaf. This statement, however, is not beyond criticism, for of late it has been shown that it is possible to teach the dumb to speak, to some extent.

When deafness is complete and due to the nerve of hearing being in an imperfect condition, nothing can be done for it by way of cure. If it is only partial and caused by the nerve being defective, measures to improve the state of the system generally will do good. When it is attributable to an accumulation of cerumen in the auditory canal the use of soap and water is, of course, completely and quickly remedial of it. If it be dependent on a discharging condition of the parts, remedies suitable for the latter are indicated. Sometimes an artificial tympanic membrane may be inserted advantageously.

Deaf children can be educated; and hence it is the duty of their parents to see that they are not allowed to grow up in ignorance. Public institutions for the instruction of the deaf and dumb exist in most of the States of the Union.

CHAPTER VII.

THE ORGAN AND SENSE OF SIGHT.

The Organ of Sight—How Seeing Takes Place—The Care of the Eye—On Objects in the Eye and their Removal—Inflammation of the Eye—Near-Sightedness—Far-Sightedness—Color-blindness—Squint—Blindness—Styes.

THE ORGAN OF SIGHT.

The eye is the organ of sight. By means of it the images of external objects are brought to bear on the nerve of sight (the optic). It consists essentially of a globe or ball which is retained in position and controlled by six small muscles which run from it to the sides of the bony socket in which it rests.

THE EYEBALL is nearly round, and it is very intricate in structure. Within four layers (the conjunctiva, the sclerotica, the choroid and the retina) there are two chambers, one of which is filled with a clear watery liquor called THE AQUEOUS HUMOR, and the other, the rear one, which forms four-fifths of the whole eyeball is filled with a clear, jelly-like substance called THE VITREOUS HUMOR.

THE CONJUNCTIVA is the membrane which lines the eyelids and is reflected over the eyeball. It is thin, translucent and very smooth.

THE SCLEROTICA is a hard, fibrous layer. The muscles of the organ are inserted into it. Being of a white color it is visible through the conjunctiva.

THE CHOROID is the layer in which the blood vessels exist principally. It contains much dark pigment.

THE RETINA or innermost layer consists mainly of a fine network of nerves. On it the images of objects are cast.

In the centre of the partition which exists between the two chambers of the eyeball there is THE CRYSTALLINE LENS, a transparent body which measures about a quarter of an inch from before backward and a third of an inch across; and in front of it suspended in the aqueous humor is a muscular curtain named THE IRIS. In the latter there is a circular opening which varies from time to time in size, and is called THE PUPIL, or more commonly THE APPLE OF THE EYE; and on the pigment in it depends "the color of the eye."

In place of the four layers there is on the front side of the eyeball the circular, convex, translucent membrane, which is called THE CORNEA.

THE EYELIDS are important appendages of the eye. In them are the hairs which form THE LASHES and also a number of small secretory organs, THE MEIBOMIAN GLANDS.

THE TEARS are secreted by THE LACHRYMAL GLAND which is about equal to an almond in size and is seated above and to the outer side of the eyeball. This secretion may find its way into the nose through the LACHRYMAL DUCT which starts by two small openings at the inner angle of the eye. When this passage is obstructed through inflammation, or from any other cause, the tears flow over the cheek.

HOW SEEING TAKES PLACE.

When light falls on the eye its rays pass through the cornea, the aqueous humor, the crystalline lens, and the vitreous humor. In going through each of these parts the direction of the rays is more or less changed or refracted and come to a focus on reaching the retina, on which the image of every object is inverted or rests upside down. The iris, in contracting and expanding, has a regulative influence over the amount of light which passes to the chamber beyond; for none can enter it otherwise than through the pupil. By a change in the degree of convexity of the crystalline lens produced by

the action of a muscle (the ciliary) which encircles it, the eye accommodates itself to distance. Were it not for this power of accommodation, an object could not be seen at all, save when at a certain distance.

Through the impressions made on the optic nerve and conveyed by it to the brain a knowledge of the appearance of things is gained. Precisely how this result is reached it is, perhaps, impossible to discover; but, at any rate, a well-defined image of any object seen must first be made on the retina.

THE CARE OF THE EYE.

The chief points to bear in mind in caring for the eyes are, to keep them clean and to use them as little as possible in glaring, dim, varying, or unsteady light. Failing to cleanse them thoroughly immediately after birth is a fertile cause of blindness. Then, as ever afterward, they should be washed with pure water simply. Those of many infants are injured by excessive exposure to strong light. Among children in general their immoderate use is, next to want of cleanliness, the great source of weakness of them and different perversions of vision. Reading, or the like, in dim, or glaring light should be avoided; but it is not so injurious as when done in varying, or flickering light. The illumination should be from behind. If it be from the side an equal degree of light does not likely fall on either eye. Using them while sitting in a bent posture, or while recumbent, tends greatly to induce congestion of them and is very productive of near-sightedness. The presence of dust is apt to irritate and inflame them.

The effects of ill-usage on the eyes are very different in different persons. In the healthy and strong, they are slight in comparison with what they are in the scrofulous. Hence, if the eyes are naturally inclined to be weak, or diseased, it is particularly desirable that they should be cared for well.

When the eyes are weak or diseased in consequence of using

them badly, it is irrational to try to get them into a healthy state otherwise than through using them properly. Glasses are, doubtless, resorted to in many cases in which hygienic care is indicated. Magnifying ones are always harmful if worn when the organs are merely weak. For this condition only colored ones are allowable. Blue is the color most used; but green is quite as desirable. That the latter is very agreeable to the sense has always been a familiar fact. Thus, Ecclesiasticus says, "The eye desireth favor and beauty but more than these green-sown fields."

ON OBJECTS IN THE EYE AND THEIR REMOVAL.

When an object of any kind gets into the eye it should be removed as soon as possible, lest inflammation be produced by it. This may be done by the use of water, or by passing a loop of wire over the ball beneath the lids. Often it is best to bring the offending body into view by exposing the conjunctiva of the lid under which it is lodged, so that it may be readily wiped away; and to do this draw the lid over a lead pencil, or anything similar. Of course, there is no possible danger connected with this procedure. Particles of lime which cannot be easily withdrawn may be rendered innocent by using a wash of diluted vinegar, or lemon-juice. Rubbing the eye should be avoided in all cases; for it tends to induce inflammation.

The feeling caused by the presence of objects in the eye may continue for some time after their removal. This is due to the irritation produced. The remedy is a drop of castor-oil, or glycerine.

INFLAMMATION OF THE EYE.

Inflammation of the eye or OPTHALMIA when seated exclusively in the conjunctiva—and this is usually the case—is not often a very grave affection, but when the iris, or indeed, any

part of the ball is involved it will likely injure the vision seriously.

Inflammation of the conjunctiva is generally induced by irritating matter getting into the eye, or cold. A bad form of it appears occasionally in infants, and especially those of bad constitution, soon after birth, and it often results in blindness.

The chief indications of this affection are, redness, swelling and soreness of the part, including the lids. The tears flow profusely, light excites pain, and there is a sensation experienced similar to that present when particles of matter are in the eye. The discharge is seldom purulent; it is mostly a mucous fluid.

Besides removing the cause of it, if mechanical, the principal remedies for conjunctivitis are the exclusion of light and the application of cold water. A mustard-plaster, or blister applied behind the ear often does good. Opening the bowels freely is serviceable. Milk may be used as a wash; but after the inflammation begins to subside a strong decoction of tea-leaves, or a weak solution of alum, answers better.

If the eyes are habitually congested, or inflamed the cause is often constitutional. Serofulous children are very apt to suffer. Measures to improve the general health are indicated. The syrup of the iodide of iron may be used. The local remedies recommended for the acute form may be of service. The use of warm water relieves soreness for a time. Cold-cream, or cosmoline may be applied. Cleanliness is exceedingly important. Wearing ear-rings is a popular means of cure, but it is of little value.

NEAR-SIGHTEDNESS.

Near-sightedness or MYOPIA is a familiar defect of vision. The proportion of people somewhat affected with it is very great; about twenty per cent. of school children are victims of it. It is, probably, becoming more and more common. It

is an error to hold that the eyes of persons affected with it are either good or strong.

This affection is immediately caused by the eyeball being abnormally long from before backward. When in this condition the refractive or dioptric media of the eye can bring the images of only near objects to a focus on the retina. It may be inherited, but it is mostly induced. The usual exciting cause of it is using the eyes immoderately, particularly while sitting in a bent posture and in defective light. Persons of weak constitution are by far the most liable to be affected.

That faults in the seating, lighting and ventilation of schools and also in the educational methods and the character of education in vogue are largely accountable for the great prevalence of this affection cannot be questioned. This matter has of late been attracting much attention. It was first studied carefully about a dozen years ago by Dr. Cohn of Breslau. Laborious investigations bearing on its prevalence and origin in school-children have been made in many of the large cities of the United States. From them it appears that it originates nearly always during school-life, and that it is most common and most marked in those who have been longest at school. Five per cent. of pupils of seven years of age, over ten of those of eleven, nearly twenty of those of thirteen, and over twenty-five of those of eighteen are affected. About four boys to every five girls suffer. It is commonest in the schools which are poorly lighted, and in which the seating is defective. Bad ventilation is very promotive of its occurrence. It is much less common among children in the country than in cities.

The prevention of this affection is all important, for when well-developed it is incurable. The eyes should be cared for properly. Defects in the hygienic condition of schools should not be tolerated. Attention should be given to the laws of health in teaching, and physical culture should not be neglected. The use of suitable glasses is not in itself harmful.

FAR-SIGHTEDNESS.

Far-sightedness or **HYPERMETROPIA** is much less common than near-sightedness. About twelve per cent. of school-children are more or less affected with it. It is present from birth. Some authorities hold that it is normal in very early life. The immediate cause of it is an abnormally short condition of the eyeball from before backward. Those affected with it cannot look at near objects long without weakening their eyes. About ninety per cent. of the cases of convergent squint are attributable to it. It is grown out of in many cases. Convex glasses are indicated in it; and it is wise for those who suffer from it and who have to use their eyes much, to wear them.

COLOR-BLINDNESS.

Color-blindness or **ACHROMATOPIA** has been much studied of late years. It is a condition in which the person is unable to distinguish certain colors, especially red and green. In children it is not of much consequence, but in adults it may be the reverse. Serious railroad disasters, or the like may be brought about by it. Cases of it are not as common as many suppose. It has been estimated that four per cent. of males and a fifth per cent. of females are affected with it. Doubtless it is sometimes due to ignorance. Dalton, a distinguished English chemist, attracted attention to it in 1794. Of the colors of the spectrum he could see only the yellow and blue and the red slightly. For it there is no remedy, save education, and it is frequently of no avail.

SQUINT.

Squint or **STRABISMUS** is a condition with which every one is familiar. When the eyes look toward the nose it is said to be convergent and when in the opposite direction, divergent. It is only of late that its nature has been well understood. Formerly the muscles which are on either side of the eyeball

and which hold it in position and control its movements received most of the blame; to the absence of equality in their power and action the affection was usually attributed. The shape of the eyeball, however, is generally at fault to begin with; in nearly all cases near-sightedness, or far-sightedness is primarily present. In persons whose eyes are myopic, or hypermetropic and who are defective in constitution and of a nervous temperament the antagonistic action of the muscles on either side of the eyeball is readily disturbed. In such persons the affection may, doubtless, be excited by imitation.

Now, it follows from what precedes that the early use of glasses suitable for myopia, or hypermetropia will tend both to prevent the development of this affection and to remove it when present. Measures to improve the tone of the system are nearly always indicated. Wearing a spectacle-like contrivance by which the eye is habitually turned in the other direction may be of service. But incising the muscle which holds the eyeball out of line is the chief means of cure. There is no danger connected with this operation; and in most cases it is very effective. Of course, it should be performed only by a competent surgeon.

BLINDNESS.

Sight is one of the most precious of human faculties. Those who are deprived of it are indeed unfortunate. Nor is their number small; there is one to every six hundred of the population.

Blindness in the young is generally due to a defect in the structure of the eye produced by a serious inflammatory disease, or an injury. Rarely is it present at birth; probably ninety-nine per cent. of the blind were born with good eyes. Whether or not anything can be done for it in any case by way of cure depends on circumstances. A surgeon should always be consulted early.

The blind may not only be made expert in many pursuits but may be educated without much difficulty. Hence, every one of them should be taught to read at least. Most of the States of the Union have each a public institution for this purpose.

STYES.

Styes or little gatherings at the edges of the eyelids are of common occurrence in many. They originate in the hair follicles and appear mostly in debilitated persons. When one of them forms its disappearance may be hastened by keeping a flaxseed-meal poultice applied to it until it is ripe, and then pricking it with a needle, so as to let the matter out. The popular practice of rubbing them with a ring, or the fingernail, while appearing, may scatter them if resorted to early. Toning up the system is the chief means by which they can be prevented. Cleanliness is important.

CHAPTER VIII.

THE VOICE AND SPEECH.

On the Nature of Voice and Speech—How and When Speech is Acquired—The Compass and other Features of the Voice—On Musical Training—Stammering.

ON THE NATURE OF VOICE AND SPEECH.

The power to produce sounds or voice is possessed to some degree, by nearly all the higher animals. The ability to control the voice, however, is well developed in man only; he alone can fully express his ideas by speech.

The organ or mechanism by which voice is produced is seated in man, as in all animals, in the air-passages.

Notwithstanding its wonderful capabilities, the human voice is produced by the vibrations of two little folds of elastic tissue, one of which exists on either side of the larynx or head of the wind-pipe, which may be felt in the neck beneath the chin and which, when projecting more or less as it does in most men is commonly called Adam's apple. There are really two parallel folds of membrane on either side of the larynx, but only the lower one is actively concerned in the production of voice. Through expiration or the expulsion of air from the lungs, the folds are moved to and fro just as a stretched cord is by the wind. But, by means of certain small muscles of the larynx over which the will has control, the degree of tenseness of the folds may be varied greatly. This enables one to modulate the pitch of the voice. The vibration of the vocal membranes or cords, however, can produce only sounds. In order to have speech, these sounds must be changed in various ways by the lips, the tongue, the teeth, the palate and other parts. The whole English language is made up of

about forty vocal elements, and these constitute what is called the phonetic alphabet.

HOW AND WHEN SPEECH IS ACQUIRED.

A child learns to speak through imitation ; and it acquires the art gradually. As Mr. Darwin remarks in his essay, "A Biographical Sketch of an Infant," "the wants of an infant are at first made intelligible by instinctive cries, which after a time are modified, in part unconsciously and in part, as I believe, voluntarily, as a means of communication, by the unconscious expression of the features, by gestures and in a marked manner by different intonations—lastly by words of a general nature invented by himself, then of a more precise nature imitated from those which he hears ; and these latter are acquired at a wonderfully quick rate." "When our infant," says he, "was only four months old I thought that he tried to imitate sounds, but I may have deceived myself, for I was not thoroughly convinced that he did so until he was ten months old."

It may be said that in general about the seventh month some attempts are made to produce articulate sounds. The syllables *ba ba*, *ma ma* and *pa pa* are among the first to be mastered. By adding word after word the ability to express all the ideas which arise in the mind is acquired. But the age at which children are able to talk is very variable. Indeed, as the eminent observer just quoted from says, "the period of development of the several faculties will be found to differ considerably in different infants." Doubtless, in learning language the rate of progress depends greatly on the instructors. Children who receive but little intelligent attention may not be able to pronounce a single word at the age of twelve months, or even much later. The majority, however, can make use of a considerable number of words by the time they reach the end of their first year.

THE COMPASS AND OTHER FEATURES OF THE VOICE.

The compass or entire scale of the voice varies in different persons. It includes about from one to three octaves. It is greatest in musical adepts. Although that of either sex is nearly equal it begins and ends at different points in the musical scale. The lowest note of the female voice is usually about an octave higher than the lowest one of the male voice; and the highest note of the former is about an octave higher than that of the latter. The female voice is, therefore, higher in pitch than that of the male, and it is also softer in tone. The difference in the pitch of the voice of the two sexes is due to the fact that their vocal cords are unlike in length; their relative length being as three to two. The difference in the tone or timbre of the voices of the two sexes arises from a difference in the capacity, and to some extent also in the form of the larynx.

Of male voices there are two kinds, the bass and the tenor; and of female voices two, the contralto and the soprano. The difference between the kinds of either sex lies in the tone. The bass voice is usually capable of reaching lower than the tenor, and its strength lies mainly in the lower notes; while the tenor is capable of reaching higher than the bass, and its strength lies mainly in the higher notes. The contralto voice is usually capable of reaching lower than the soprano, and its strength lies mainly in the lower notes; while the soprano is capable of reaching higher than the contralto, and its strength lies mainly in the higher notes. What are called barytone and mezzo-soprano voices are those of a mixed tone, the former being intermediate between the bass and tenor and the latter intermediate between the contralto and soprano.

Most persons, especially males, are capable of modulating the voice in singing so as to produce a double series of notes of unlike character. Those produced in the natural voice are called chest notes and those in the modified voice falsetto

notes. The latter are somewhat flute-like. The chest notes are much the fuller. The higher notes of the male voice can be produced with the falsetto only; the middle notes with either the natural or falsetto; and the deeper notes with the natural only.

Now, until the period of puberty is reached, the voices of males are like those of females, except in loudness. They may be classed as soprano and alto or counter-tenor. At the period named, that is from twelve to fourteen years of age they undergo change, they are in a "cracked state" for a time. In this state they are generally hoarse and crowing and are unfit for singing purposes, until the new notes are brought under command by practice.

ON MUSICAL TRAINING.

Training in vocal music is of benefit to all children. To be sure, it is not possible to make every one a great musician; but it is possible by cultivation to improve every one's voice to some extent. Gœthe is sometimes quoted as saying that "we should guard against a talent which we cannot hope to practice in perfection;" but this doctrine applies only, if at all, in respect to the use of a talent as a business in life. Very few have any talents that are capable of being cultivated to the point of perfection. Not one voice in every ten thousand can be made to rival the best in musical power. However, it is true that those who are in the habit of singing generally articulate most distinctly. This is a sufficient return for the time, expense and efforts required to gain the ability to sing a little; for indistinctness in speech is a deficiency which merits serious attention. But singing is also beneficial to both body and mind through its stimulating effects; and besides it is a means by which the pleasure of others may be greatly promoted. Altogether, then, it is one of the very best of accomplishments.

STAMMERING.

Stammering is a serious defect in speech. Want of power to control the vocal apparatus is the sum and substance of it. This power can be acquired by culture. Let persevering efforts be made to articulate clearly and distinctly. This is the sole source of relief. Nor is it often insufficient. Thus it was that Demosthenes, one of the very greatest of orators, got relieved of it. In the biography of him by Plutarch we are informed that "the hesitation and stammering of his tongue he corrected by practicing to speak with pebbles in his mouth; and he strengthened his voice by running, or walking up hill and pronouncing some passage in an oration, or a poem during the difficulty of breathing which that exercise caused." As the trouble is generally in a measure due to nervousness such means as will improve the general physical condition are in order.

CHAPTER IX.

THE HAIR.

The Structure and Allied Features of Hair—Properties and Allied Features of Hair—On the Invigoration of the Hair—Remarks on the Care of the Hair

THE STRUCTURE AND ALLIED FEATURES OF HAIR.

The hairs, like the nails, are appendages to the skin, and in structure are modifications of it. They are present throughout the entire surface of the body, except, perhaps, the palms of the hands and the soles of the feet. As many as seven hundred have been found growing on a square inch of the scalp. In males they are everywhere better developed than in females, unless, perhaps on the head.

A hair may be described as consisting of two parts, a shaft and a root.

THE SHAFT or external portion of a hair is cylindrical, flexible, elastic, and of various hues from white to red, or black. It is composed of an external layer or coating of minute scales (the cuticle) which are directed upward and outward, and an internal portion (the cortex) which is fibrous and in which the coloring matter exists. Within the cortical portion there runs sometimes a central axis (the medulla) of granular material by which oily matter is imbibed easily.

THE ROOT of a hair is very similar to the shaft in structure; but it is thicker, softer and less distinctly divided into layers. It rests in a little follicle, a flask-shaped fibrous sack, in and slightly beneath the inner layer of the dermis; and at its end it embraces a small PAPILLA from which it is developed. The follicle is really an infoldment of the dermis

and being elastic, tightly clasps the enlarging root and thus moulds, as it were, the forming hair.

Both the shaft and the root of a hair contain neither blood-vessels nor nerves; and being void of the latter they are consequently not possessed of sensibility. Neither of them grows, or lives. Their freshness is maintained by imbibition.

The hairs generally rise obliquely from the skin, and are arranged systematically in parallel lines, or whorls. When the arrangement is irregular and they are inclined in all directions it is hard to keep them dressed. This is common in those of the eyebrows. By continued forcing it is possible, perhaps, to give them any inclination desired.

I have said that the hairs are cylindrical in form; and so they are, as a rule; but they are sometimes much compressed; and when this is the case they are prone to curl.

All addition to the length of hairs is made at the root; none occurs at the terminal end of the shaft. To persons who use dye this is a very obvious fact.

PROPERTIES AND ALLIED FEATURES OF HAIR.

Very few substances are worse conductors of heat than hair. If it were a good conductor it would not serve so well as it does the important purpose of maintaining the head constantly at the same degree of temperature. As bearing on this point I may say that of two persons equally exposed to the rays of the sun, one with plenty of hair and the other with very little, the former suffers less than the latter from the heat; but if the heat originates in the system the reverse of this is true. Hence one on whose head there is little should be protected with particular care on being exposed to strong sunshine; and one subject to congestive headache derives advantage from keeping it scanty.

Hair is very absorbent of moisture; and it is thickened and elongated to a considerable extent by it.

The life of a hair may be short, or long. It may increase in length for an indefinite period; but any great disturbance of the skin, such as that consequent on an attack of typhoid fever, sometimes causes it to fall off. When this occurs a new crop generally appears soon and it is apt to be better in all respects than the old one.

The coarser and more abundant the hair is the stronger is the person. We are told that Samson's locks were very profuse, and of the headstrong Absalom that "he weighed the hair of his head at two hundred shekels," which would be six and a quarter pounds. Some question this view, except when it is held in reference to the hair of the head and face. Goethe, for example, says, "A superfluity of hair on the chest and lower limbs rather indicates weakness than strength." However, all are of the opinion that a heavy head of hair is a sign of a vigorous, sound constitution and of the presence of a plentiful supply of good blood. On the other hand, when it is poorly developed, or inclined to fall off, there is a lack of healthy activity and nourishment at its roots. A knowledge of these facts enables one to intelligently undertake the task of promoting its growth.

ON THE INVIGORATION OF THE HAIR.

The first thing to do in setting about the invigoration of the hair is, to see whether or not the system is in a healthy state and has present in it a sufficient amount of pure, rich blood. Any defect in the general condition should receive attention. The principles of hygiene should be complied with, and, perhaps, a tonic such as the wine of iron may be indicated.

As to local measures for increasing the strength and growth of the hair, a mixture of equal parts of castor oil and the spirits of cologne may be applied. This mixture is particularly indicated when the hair and scalp are dry. It should be well rubbed into the latter; and then a stiff brush may be

used until a glowing sensation is produced in the part. This may be done once, or twice a day. Oiling and brushing the hair alone will not bring about the desired effect.

Cutting off the ends of the hair is promotive of its growth. The shorter it is cut the better. Shortening it seems to stimulate the functional activity of the papillæ which produce it.

REMARKS ON THE CARE OF THE HAIR.

The hair should be kept clean. That of many, however, is ruined by washing it frequently with strong soap. This agent destroys the oil upon which its freshness and lustre and to some extent its color depend. Even the mildest should be used sparingly. Water to which a little ammonia has been added cleanses it well and also favors its growth.

The use of pomades, or other greasy preparations is not advisable, as a rule; for they are apt to become rancid and consequently prove injurious. The hair of nearly all healthy persons is oily enough naturally. In some a mixture of castor oil and the spirits of cologne may be used occasionally to advantage. Glycerine to which a little ammonia has been added makes a very clean dressing.

The use of crimping pins, curling irons and the like is injurious to the hair. Nor is plaiting and papering entirely harmless. All tend to increase its density and change its shape individually. Through the use of a bandoline curling and crimping may be done in a very harmless way. A good one is made by dissolving half a drachm of gum-tragacanth in two ounces of spirits of cologne and a like amount of water.

Powder is injurious to the hair, especially if it be alkaline. If one be used rice-flour should be preferred. This agent is the basis of some of the so-called violet powders.

Keeping the head warmly covered by day, or at night is injurious to the hair. This is a common cause of premature baldness.

CHAPTER X.

THE TEETH.

The Structure of the Teeth—The Temporary and the Permanent Teeth—Dentition—On Degeneration of the Teeth—The Care of the Teeth—Toothache—Dental Caries and Related Matters.

THE STRUCTURE OF THE TEETH.

A tooth consists of two parts, the crown and the root or fang; the former of which lies without and the latter within the gum.

On splitting a tooth in the line of its length it is seen to be made up of a pulpy mass in the centre, in which the nerves and blood-vessels are imbedded; a thick layer of ivory-like material (dentine); a crown-capping of enamel, the hardest of organic products; and a fang-investment of bone-like substance (cementum). If a large portion of the enamel is removed, the tooth does not wear well and is apt to undergo decay.

THE TEMPORARY AND THE PERMANENT TEETH.

The teeth begin to appear in the seventh month, or earlier. They usually come in pairs; and those of the lower jaw generally precede the corresponding ones of the upper. Those immediately in front come first. By the end of the second year THE TEMPORARY OR MILK SET has appeared. It consists of two incisors, one canine and two molars on either side of each jaw. The canines of the upper jaw are commonly called the eye-teeth and those of the lower the stomach-teeth.

The early appearance of the temporary teeth is not a sign of a vigorous constitution; it is rather the reverse. They should gradually fall out without undergoing decay, from the

seventh to the fourteenth year, to give place to the permanent set. More or less decay of them is very common.

THE PERMANENT SET of teeth consists of thirty-two, including the four wisdom ones, which do not appear until about the twenty-first year of age. There are sixteen in either side of each jaw as follows: two incisors, one canine, two premolars and three molars. The root of each of the first two upper molars has three branches, that of each of the first two lower molars two, and that of each of all the others one. There is, however, a disposition on the part of the root of each of the premolars to divide into two parts, and that of each of the upper wisdom ones to divide into three and of the lower ones into two. Rudiments of those of this, as well as those of the temporary set are present in the jaws at birth.

It is stated by Pliny that "women have fewer teeth than men." The great naturalist Cuvier in commenting on this statement acknowledges that it is sometimes true and gives a satisfactory explanation. He says, "The wisdom teeth are more frequently absent in women than in men." Instances of aged persons of either sex but particularly of females who have never had all four, or any wisdom teeth are common.

DENTITION.

The time during which the temporary set of teeth is appearing is generally regarded as a critical period of infancy. The process is, of course, perfectly natural; but nevertheless there is a heavy mortality traceable, in a measure, to it.

In a healthy child dentition is not a source of any danger to life. Besides a desire to thrust the fingers in the mouth, a liberal flow of saliva, occasional flushings of the cheeks, thirst, restlessness and fretfulness usually attend it. In many cases the bowels are inclined to be loose. All, or some of these symptoms occasionally precede by several weeks the appearance of a pair of teeth and indicate that "breeding of

the teeth" as it is called popularly is going on ; but they disappear in a few days.

As pressure on the gums through which the teeth are coming dulls the sensibility of the part it is agreeable to the child. Consequently it is advisable for the nurse to rub them frequently with the finger. Biting a ring of ivory, or india-rubber is also comforting.

During dentition the child should be given plenty of exercise in the open air ; and his head should be kept bare, or nearly so. After the morning and the evening bath his entire surface should be well rubbed. If much thirst is present it is wise to let him nurse frequently, but not long enough each time to load his stomach. Milk should be the sole item of diet. It is well to keep the bowels moderately loose. No narcotizing medicine should be used, as a rule.

If the cutting of the teeth is attended with much fever and irritability the gums should be lanced at once. There can be no valid objection presented against this operation. It causes little pain and generally affords relief speedily. If there is any tendency to convulsions it is criminal to delay the performance of it one minute. No special skill is required to enable one to do it ; and a sharp penknife may be used in place of a gum-lancet. Take hold of the inflamed gum between the thumb and index finger of the left hand and make the incision in the centre of it. Press the instrument in until the edge of it is heard to grate on the tooth. If it is a double or molar tooth which is coming an incision across the gum as well as one in the line of it should be made.

ON DEGENERATION OF THE TEETH.

It is very remarkable that the teeth are soundest and most regular in savages, as a rule, that they progressively degenerate and are at their worst in people in the foremost grade of civilization. In an essay on those of the race which

preceded the Indians in North America, the Mound-Builders, based on a study of a collection of them and published some time ago in *The Dental Cosmos*, I have said, "Not one tooth that I examined was either broken or affected by disease." An examination of those in the numerous skulls of various primitive and ancient peoples in the Philadelphia Academy of Natural Sciences shows that they are almost free from caries. The cause of their degeneration in modern civilized races is not definitely known, but it is generally attributed to the character of the food. Doubtless, if the food were simpler than it is and called for more mastication, it would be less common. When complicate and sugary it injures them indirectly by deranging the digestive organs and directly by favoring the accumulation of matter about them. Extremes in its temperature are very harmful to them; for they and the gums are very sensitive to heat and cold. Bringing articles varying almost from the boiling to the freezing point into contact with them a number of times daily cannot but induce disease and greatly promote it when present. Whatever the cause, or causes of their degeneration may be it is certain that in those of good constitution they are most apt to be sound and regular.

THE CARE OF THE TEETH.

Keeping the teeth clean is favorable to their preservation as well as their beauty; and hence it should be attended to from early life forward. For this purpose a brush and water should be used freely every morning and evening. Castile soap is of service in connection with the water. A little ammonia, carbonate of soda, tincture of myrrh, or tincture of camphor may be added to the water. After each washing they may be polished with the end of a dry towel.

To remove and prevent the fetor caused by decaying teeth carbolie acid soap, or the permanganate of potash may be

used. Of the latter enough to slightly tint the water is sufficient.

If the teeth are inclined to be loose, or the gums be spongy the mouth should be rinsed occasionally with a solution of alum. The tincture of myrrh is beneficial.

TOOTH-POWDERS of various kinds are much used. Those which are essentially scouring agents are harmful ; for through them it is possible to destroy the enamel of the teeth. The occasional use, however, of say powdered charcoal, or prepared chalk to remove accumulations of tartar is unobjectionable. But for this purpose a little vinegar is quite as good.

A TOOTH-PICK is deserving of little favor. The use of this instrument injures the gums and by stripping them from the teeth creates places for particles of food to lodge. Hence it tends to give rise to the very trouble it is used to correct. If at any time it is absolutely required to remove an adhering piece of food it should be manipulated with care.

TOOTHACHE.

Toothache is a common illness and it is one in which the sufferer usually receives but little sympathy. Some children are greatly tormented by it. Although not dangerous to life it may seriously impair the health. Being seated near the brain it badly disturbs the functions of the whole nervous system. Nobody either young or old can bear it patiently.

The remedies are not the same for all forms of toothache. If the pain is continuous, the cause being an irritated, or inflamed condition of the parts around the root of the tooth, or of the tooth itself, the application of anything warm, such as hot water, or the tincture of myrrh will afford at least temporary relief, as will a piece of ice, or anything else that is cold ; and if it is intermittent and consequently purely neuralgic in character, the cause being exposure of the nerve of the tooth, relief may be obtained speedily by applying a

drop of creosote. Should there be a cavity a little cotton saturated with the latter may be placed in it. This is a good preventive under the circumstances, and when resorted to for the purpose it may be renewed every three days, or so. A pepper-, or mustard-plaster applied over the jaw is often very serviceable. Should the inflammation and pain be extremely marked and obstinate advantage will be derived from the free use of chloral, or the solution of morphia for a time. If there be a collection of matter at the root of the tooth the early removal of the latter is generally indicated, not only for the sake of getting rid of pain but to prevent serious trouble from arising in the jaw-bone.

DENTAL CARIES AND RELATED MATTERS.

As hinted above, the teeth of many are very liable to undergo decay. This is common in the temporary as well as the permanent ones. When it occurs there will likely be more or less pain sooner or later. The latter or toothache is greatly favored by the presence of particles of food. After the crown has entirely disappeared comparatively little of it is experienced and it is not purely neuralgic in character.

When decay of a tooth sets in its progress can be stopped by the insertion of a filling; and hence this should be done as early as possible. Gold is largely used for the purpose, but it is not as good as gutta-percha, oxychloride of zinc, an amalgam, or any of several other agents under some circumstances. For a temporary tooth in which there is a large cavity gutta-percha mostly answers best. Of course, a dentist should be consulted.

When a tooth becomes very largely decayed and causes pain it should be removed, whether it be temporary or permanent. There is little or no ground for the idea that the premature removal of a temporary tooth will prove injurious to the permanent one.

CHAPTER XI.

THE HANDS AND FEET.

Structural Features of the Hands—Manual Dexterity—Miscellaneous Items about the Hands—Items about the Feet.

STRUCTURAL FEATURES OF THE HANDS.

The hand is a wonderful instrument. In his famous book on the subject, Sir Charles Bell takes occasion to observe that "there is inconsistency and something of the child's propensities still in man. A piece of mechanism, as a watch, a barometer, or a dial will fix his attention; a man will make journeys to see an engine stamp a coin, or turn a block, yet the organs through which he has a thousand sources of enjoyment and which are in themselves the most exquisite in design and the most curious both in contrivance and mechanism, do not enter his thoughts; and if he admires a living action that admiration will probably be more excited by what is uncommon and monstrous than by what is natural and perfectly adjusted to its office."

It is unnecessary to describe the muscles and other parts which form the hand and on which its functions depend.

The length of the hand is equal to about one-ninth of the stature. The relative length of the fingers is somewhat unlike in different persons. This is particularly true of the first or index and the third or ring one. In the majority the former is the shorter. The latter is oftener the shorter in females than in males. In the Venus de Medici, the Apollo Belvidere and nearly all other antique figures the former is the longer. This condition is regarded as the more beautiful. In some they are of equal length and in a few their relative

length is not alike in both hands. From an artistic standpoint this subject is very interesting.

THE FINGER-NAILS are appendages of the skin. Each of them rests in a specially modified portion of the dermis (the matrix) and takes the place of the epidermis. They should be smooth, or but very faintly striated from end to end, shining, somewhat arched in form and of a delicate pink hue. The posterior fourth (the lunula or little moon) of each should be a little paler and the free border brighter than the rest; but it should be translucent throughout. White spots are often present in them and they come and go mysteriously.

In the scrofulous the nails are apt to be curved both from side to side and from end to end.

MANUAL DEXTERITY.

Manual dexterity is mainly the result of education, and it can be carried to a surprising degree of perfection. Exercise is the great means. It is by practice that one learns to write, or shape an intricate piece of mechanism.

The right hand is usually more susceptible of improvement than the left; but in a few the reverse is the case. Not many have as full a command of the one as the other. Hippocrates remarks that "a woman does not become ambidextrous;" but this is an error.

Some still hold that all difference in the dexterity of the two hands is acquired; but it is probable that heredity has much to do with it. It may depend somewhat at least on want of similarity in the blood-vessels on either side. Many believe that the artery which runs to the right arm is so situated that it receives, as a rule, more blood than the one which runs to the left. However, it is certain that through training any natural difference in the power of command of the hands which may exist can be very completely overcome. Those in charge of the young should bear this fact in mind.

MISCELLANEOUS ITEMS ABOUT THE HANDS.

Chapping of the skin of the hands is common among children in cold weather. The application of cold-cream, glycerine, or lard is indicated.

A clammy condition of the palms of the hands is due to debility. Measures to improve the general health are remedial of it. Bathing the parts with water to which a little ammonia has been added is beneficial.

A brush, soap and water are all the agents necessary to keep the finger-nails in order, except, of course, a sharp knife, with which to trim them occasionally. Powders and files may be useful sometimes, but generally speaking they are entirely uncalled for, and the free use of them is likely to be injurious.

Most persons are liable to have loose shreds of skin about the roots of the nails or ragnails at times; but some are far more subject than others to them. Their removal with a pair of scissors is indicated. If allowed to remain present long they may give rise to sores and gatherings.

Biting the nails is a practice to which some children are addicted. There is no particular harm in it, but it is a habit which is inconsistent with propriety. Good advice may suffice to prevent it, but if not, recourse may be had to the application of a bitter substance to the parts.

When a nail is removed by violence, or intentionally a new one will grow in its place, unless a strong caustic agent is applied. All that it is necessary to do under the circumstances is to bathe the part well with cold water in order to control the bleeding, and then keep a greased rag bound on it for a few days.

ITEMS ABOUT THE FEET.

The structure of the foot, including the nails, is very similar in most respects to that of the hand. Nothing special need be said about it.

It is scarcely necessary to say that it is proper to keep the feet clean. They should be washed frequently, and soap may be used freely with the water. If they are inclined to perspire much this must be done in order to prevent them from giving off an unpleasant odor. Excoriations and fissures are liable to occur about the toes, if cleanliness is not observed. For them rice-flour, or any other powder, or zinc-ointment may be used.

In early infancy, or in other words while long dresses are worn no special covering is required for the feet; but the use of knitted worsted socks is allowable. Later, shoes are called for with cotton, merino, woolen, or silk hosiery. The latter should consist of cotton in summer only.

In going bare-footed at times children are very apt to catch cold; but if they are in the habit of doing so it is not at all harmful to them. The same is true of getting the feet wet.

A shoe should protect the foot against bruises and other forms of injury and keep it at a proper degree of temperature. To answer these ends the weight and make of it will depend on the mode of life, the season of the year, the character of the hosiery and other circumstances.

The shoes of boys are often too tight, and those of girls are seldom otherwise. This is a serious mistake. While the foot is developing it should not be cramped in any way, or to any degree. If this precept be not observed suffering and deformity may be expected.

It is particularly desirable that shoes should be roomy at the toes. In walking the weight of the body is thrown first on the heel and then inclined forward gradually on the toes, which in consequence spread. From this it is evident that a shoe should be somewhat broader toward its toe than the foot is while at rest.

High-heeled shoes are very objectionable. They are extremely favorable to suffering and deformity about the toes,

and their influence on the general health is bad. Many cases of nervous affections are aggravated and not a few are actually caused by them. Nature does not warrant walking on the toes; man is not a digitigrade animal.

Water-proof over-shoes are highly useful. Generally speaking it is not advisable that they should cover the entire upper part of the foot; for from being impervious to moisture they favor the accumulation of perspiration. Their removal is apt to be followed by a cold, if there is much perspiration present and it is allowed to evaporate.

The subject of corns is treated of fully elsewhere.

It may not be amiss to say a few words about ingrowing of the nails or onyxia, although this condition is not common in early life. Seldom is any other than the nail of the great toe affected. Thickening of the soft parts has often quite as much to do in producing the pain and inflammation as curving inward of the side of the nail. The cause for the most part is wearing shoes which are very narrow at the toes. Rounding the end of the nail in cutting it is favorable to its occurrence.

When the affection begins to appear it is wise to at once take measures to prevent its development. Shoes which are narrow at the toes should be abandoned. The nail should be kept square at the end; and if it is thick it is well to file, or scrape it thin from the root forward near the centre, so as to check its tendency to turn inward at the sides. Between it and the flesh a piece of cotton may be inserted. Cold-cream, or any other simple ointment may be applied. In severe cases it is necessary to remove the nail.

Inflammation with, or without the formation of matter about the roots of the nails of both the fingers and toes or onychia is common, especially in persons of scrofulous constitution. It is usually excited by injuries. The application of cold-cream, or any other mild ointment, or a poultice is indicated. Occasionally the nail comes off.

CHAPTER XII.

PERSONAL BEAUTY.

Preliminary Remarks—On the Nature of Beauty—The Basis of Beauty—Special Remarks on the Culture of Beauty.

PRELIMINARY REMARKS.

It is very desirable that people should be in form, complexion and other respects as beautiful as possible; for beauty and perfection are synonymous terms; everything that is perfect is beautiful and everything that is imperfect is ugly. Let no one, then, as Miss Martineau says in her "Household Education," "utter the cant that is talked to young ladies at school that the charms of the mind are everything and those of the form and face nothing." All parents are really and properly more or less anxious that their children should be well-developed and attractive. Not as much attention, however, is given to the cultivation of personal comeliness as might and ought to be.

ON THE NATURE OF BEAUTY.

The meaning of personal beauty is not well-understood by people generally. By many it is associated with the appearance of the face; but it is not limited to any part of the body. It is hard to express in terms the *tout ensemble* of delicacy, grace of outlines and harmony of proportions and colors which constitute it. The laws of it are not variable. There can be no doubt that just as there are odors, tastes and sounds, which in the nature of things are pleasing to all, so there are certain forms and colors and combinations of these which are in themselves pleasing.

In one of his essays Dr. Rush says, "There is a certain figure which is calculated to give pleasure to the eye. Hogarth places it in the curved line which he calls THE LINE OF BEAUTY. This line occurs oftener in the human figure than in that of any other animal, for which reason man is considered the most beautiful creature on the face of the earth." In all forms throughout the vegetable and animal kingdoms, or in other words in all living things the production of the curved line seems to be the great aim of Nature. Everything that is rounded and smooth is pleasing to the eye.

There is a certain relation of the size of parts to each other and to the whole which is an essential portion of beauty and it constitutes what is known as PROPORTION. I cannot dwell on this subject; so I will simply state that in any particular object the standard of proportions is the proportions of the type, or rather the *beau idéal* of its kind, or species. For example, the best proportions—those which are the most beautiful—of man are those of the best type of his race. "It is from a reiterated experience," says Sir Joshua Reynolds in his admirable "Discourses," "and a close comparison of the objects in Nature that an artist becomes possessed of the idea of that central form, if I may so express it, from which every deviation is deformity." Absolute beauty of form is an ideal and in all things there is only more or less of an approach toward it. Properly, then, all things should be regarded as only relatively beautiful.

It is generally thought that the most artistic proportions of the human form, male and female, are found respectively in the Greek statues, Apollo Belvidere and Venus de Medici.

Although matters of outline and proportion, I may say a few words specially about grace and symmetry.

The idea of action is always associated with GRACE; it is a quality of motion and attitude. With correct outlines and proportions all natural attitudes and motions are graceful.

Ease and freedom from constraint are essential elements of gracefulness.

To make the body lithe and graceful in movement calisthenic and gymnastic and also less systematic exercises, particularly dancing—motion's poetry—should be practiced. Free, sweeping, unconscious movements are always graceful. Mere strength has little to do with grace and any system of physical culture which does not include free movements of all the joints and muscles contributes but little to it. To move gracefully requires persistent effort for a time. As one commits to memory a piece of poetry by repeatedly reading it, so one acquires grace in motion by repeating the movements until they can be carried on without thinking.

SYMMETRY is the word used to express similarity of the parts of either side of the body. Thus the eyes, the cheeks, the sides of the head, the arms and so on should be alike, or there is want of symmetry and consequently want of beauty. Very few are perfectly symmetrical.

Another main element of beauty is COLOR. Some features of this subject are treated of elsewhere. In the complexion the tints of white and red are often surprisingly beautiful.

EXPRESSION is clearly related to beauty, particularly of the face. A face of statuesque beauty, still and colorless, is admirable to be sure, and if it be richly embellished with Nature's skillful pencil it is much more so; but if it lacks expression it is like a flower void of fragrance, wanting in a great source of magnetism. When the power of mind, or the charm of heart, or both these beam in features of perfect form and tints then is it indeed overpowering. Bacon had reason in saying that "the best part of beauty is that which a picture cannot express." It is true, expression does not always improve the appearance of the face; but it is only when the mind and heart are defective, or the person is racked with pain, or oppressed with care, or disease. The cultivated mind and

loving heart and pleasurable feelings will always have a gracious expression. In a face resplendent of heart and mind the mere form may be overlooked, so powerful is animation, so engrossing the expression of the vital spark within.

THE BASIS OF BEAUTY.

What is the basis of personal beauty? It is health. Degeneracy and sickliness are the great causes of ugliness. Who ever saw a beautiful unhealthy child? Who ever saw a lovely sickly maiden? To be pleasing to the eye as well as every other way one must wipe away unhealthfulness. In fostering health lies the secret and art of promoting and preserving beauty. Those who would be beautiful must get on intimate terms with Hygeia and follow her precepts. Thus it was that the people of Sparta attained their physical perfection. Their prominence in this respect was due to their own efforts to be healthy and strong, to their strict regimen and systematic exercises, to their physical culture.

SPECIAL REMARKS ON THE CULTURE OF BEAUTY.

By the culture of beauty is properly meant the improvement of the condition of the whole organism, physical and mental. Hence, much of the matter found in this work bears on it directly, or indirectly. I have treated of it systematically in another book; and to it the reader who desires special information on the subject is referred. There are several features of it about which a few words may be said here.

Compressing the waist is still in fashion, to some extent, as a means of improving the female figure. As stated elsewhere it is very harmful to the young. Nor is it less contrary to the laws of beauty than those of health. It is the prevalence of a false taste which leads to it. The waist of the Venus de Medici is thirty inches in circumference, or in other words half the stature.

Wearing excessively tight shoes is a common practice ; and as has been pointed out elsewhere it is a very injurious one. The popular notion that a very small foot is in consequence beautiful is an error. This, as also every other part of the body may be disproportionately small as well as large. The length of it in all famous antique statues, according to Winckelmann, a celebrated historian of the fine arts, is equal to one-sixth the stature ; and Albrecht Dürer, a great modern artist who paid much attention to the subject of proportion, held this to be the proper length.

The character of the complexion is a subject of anxious concern to many. Both boys and girls are very sensitive to defects in it. It is the intention of Nature that every one's should be good. With the general health in a proper state it can scarcely be faulty. All, or nearly all the flaws in it which are liable to be present are treated of in the chapter on diseases of the skin.

The use of COSMETICS or powders and paints to improve the complexion should not be thought of at any age but especially in very early life. Plenty of pure water with a little soap is the only local beautifier in which, under ordinary circumstances, people should place their trust. For persons of very delicate skin either rain-, or distilled water is recommended, as both are free from alkaline minerals. After washing the face, sponging it with water of orange, or elder flowers, or lavender-water, or bay-rum has a brightening effect on the complexion.

To soften and otherwise improve the skin of the face and also of the hands it may be rubbed occasionally with glycerine, or covered for a number of hours with a piece of chamois which has been saturated with this agent.

A plentiful growth of hair is justly held in high esteem. When this curious natural covering is poorly developed its improvement is usually a matter of much solicitude. Of the manner in which it should be cared for and the means by

which it may be invigorated I have spoken at length elsewhere. Of course, no quack nostrum should be applied to it for any purpose.

The hair of girls is not infrequently injured in dressing it. Elsewhere I have pointed out the harm which may attend crimping and the like. Banging and other forms of mutilation of it are unjustifiable. Besides making one for the time being somewhat idiotic looking, letting it rest on the forehead favors the production of a growth of it on the latter.

The removal of hairs, the presence of which is objectionable, because of their location, or for some other reason is a subject in which many are interested. Agents used for the purpose are called *DEPILATORIES*. Those in the market consist mainly of arsenic, caustic potash, quick-lime, or litharge and act by destroying the roots of the hair. Strong ammonia is quite as good as any of them and a pair of tweezers answers better than it. But removing hairs through destroying their roots does not prevent their reappearance. This is due to the fact that the papillæ which produce them are uninjured; and hence their return can be prevented only by disorganizing the former. To do this a fine needle from which a little piece of the point has been broken should be put into each of the follicles from which the hair has been plucked and then be rotated and moved otherwise for a time. Some inflammation should follow.

A well-developed, sound, regular set of teeth is an enviable possession. Such a one is uncommon even among the immature. The early decay and the irregularity of these useful as well as ornamental structures are doubtless largely preventable.

The care of the teeth and related matters are treated of elsewhere, but nothing has been said about their irregularity. This subject is one of great importance. Generally speaking the permanent teeth alone are liable to be irregularly arranged in the jaws. Letting the temporary ones remain present after

these have made their appearance is sometimes the cause of it; but it springs mostly from crowding; and this is usually due to either the teeth being particularly well-, or the jaws being very ill-developed. The removal of a tooth is often the only way to prevent it when it is arising as a result of crowding. If the jaws are defective measures to improve the general health are serviceable.

When one, or more teeth are out of line what should be done? Let a sensible dentist be consulted as to the propriety of interfering with them and follow his advice. Undoubtedly in many cases it is possible to press them into their proper position without injuring them in any respect. It takes considerable interference to destroy their vitality. Even after being extracted they will grow, if soon replaced in their sockets; and what is more remarkable still those of another person may be substituted, as Ambrose Paré, a great French surgeon, demonstrated over three hundred years ago.

A few remarks in reference to ear-rings may not be out of place. Wearing them is a custom of ancient origin. It was in favor with the Egyptians, Greeks and Romans. The ears of the Venus de Medici are pierced and were probably ornamented at one time with rings. In many Oriental countries it is not unusual for males as well as females to adorn themselves in this way.

Piercing the ears for rings is a simple and innocent operation. It may be done at any age but it is not wise to have it done in childhood, for ear-rings disfigure a child by giving her something of the air of a dwarfed adult. The procedure is very easy. Having decided on the proper point rub the lobe, or apply ice to it until it becomes numb, and then pass a medium-sized needle armed with a silk thread through it, letting the latter remain. A little irritation and, perhaps, some inflammation may result, but no serious consequences need be apprehended.

SECTION II.

MENTAL CULTURE.

CHAPTER I.

GENERAL FEATURES OF MENTAL CULTURE.

Preliminary Remarks—Relations of Mind and Body to Each Other—On the Nature of Mind—The Nature of the Mind, and Mental Culture—The Ends of Mental Culture—The Basal Principle of Mental Culture—When Mental Culture Should Begin—Mental Precocity—Home-Culture of the Mind—Public Schools and their Work—Mental Culture in Private and in Public—On the Age at which to Enter School—The Kindergarten Method of Education—The Choice of Knowledge—Sex, and Mental Culture.

PRELIMINARY REMARKS.

It is the possession of a highly developed mind which not only gives man the right to claim but enables him to assert his superiority to everything else in Nature. On his liberal endowment with this subtile power largely depends his ability to triumph over all other creatures in the struggle for dominion. Did he not possess it in a higher degree than any of the inhabitants of the forest his ascendancy should soon cease. Again if it were not for its social organization and civilization would be impossible. And among men those that are most gifted with it are very certain to be leaders. Indeed on the degree in which it, or rather the nobler part of it is developed depends man's power over circumstances; or as Emerson, a

celebrated American philosopher, puts it, "Intellect annuls fate: so far as a man thinks he is free." Certainly the culture of the mental faculties is deserving of all the attention which can possibly be given to it.

RELATIONS OF MIND AND BODY TO EACH OTHER.

The seat of mind is the nervous system. The brain is usually regarded as the part in which it originates; but it is certain if this part had no external connections there could be no mental activity within it; without the special senses there could be no mind.

It is hardly necessary to advance arguments to prove that the existence of the mind is dependent on the physical organization. The degree of development of the nervous system among animals corresponds with their mental endowments. Hunger, exercise, disease and everything which acts on the body also affects the mind. It is possible to depress the system to such an extent by cold and otherwise that no evidence of the presence of mind is left. On the other hand by the use of stimulants, or the like the various mental faculties can be rendered more active and powerful. Impurities in the blood affect the mind; and hence it is closely allied in a manner to the emunctories. A blow on the head, if severe, will stop mental action wholly for a time.

Mental action greatly influences the body. This becomes at once apparent when the feelings are markedly impressed. Through fear the whole system may be utterly paralyzed. After severe mental strain the evidence of it is obvious in the shape of an abnormal abundance of phosphatic salts in the urine.

ON THE NATURE OF MIND.

Through excitation of certain parts of the brain by means of an impression made on one of the special senses CONSCIOUSNESS, the fundamental element of mind, is produced.

Precisely how this astonishing phenomenon takes place does not admit of demonstration.

It must not be supposed that by consciousness is always meant one and the same thing. A different form of it is produced by each unlike impression made on each of the senses ; and a different degree of it attends the various degrees of intensity of each.

The mind is a unity. What are spoken of as faculties or powers are neither ultimate nor distinct elements. Such divisions are recognized mainly for the purpose of facilitating description.

All the faculties of the mind may be classed under one or other of three heads, namely, FEELING, INTELLECT, WILL. Each of these will be fully treated of later ; so it is unnecessary to say anything about them here.

THE NATURE OF THE MIND, AND MENTAL CULTURE.

A knowledge of the nature of the mind, but more especially of its development and growth, is necessary to enable one not only to formulate a correct plan of mental culture or education but to apply it. If one does not know anything about the mechanism of mental action it is impossible to control it intelligently. Until the structure of a complicate machine is well understood any attempt which is made to regulate it is apt to derange it.

In other days people spoke in all sincerity of the body as "our vile body ;" and the dependence of mind on it was totally denied. While such ideas prevailed there could be nothing like a scientific plan of mental culture in force. The bodily condition must receive attention, or the efforts made to improve the mind will in a great measure, be spent in vain. A sickly person cannot make much headway in learning. Dr. B. W. Richardson well remarks, " Learning is cheap now and whoever can read and write can become a scholar, if he can

become a healthy being. The dearest thing in the market is health, without which learning, be it ever so cheap, is bought for a sacrifice and is burnt on its own altar." If the body is weak there cannot be much mental force. A perfect physical organization is the basis of mental greatness.

THE ENDS OF MENTAL CULTURE.

The main end of mental culture is to render strong and subtile all the faculties of the mind. These do not unfold of themselves; and they must be systematically stimulated and trained, or they will not become either harmoniously developed or skillful in action.

That the acquisition of knowledge or instruction is the main end of mental culture is a very prevalent and yet a very erroneous notion. In Shakspeare occurs this dialogue between Ferdinand, King of Navarre, and one of his attendants named Biron :—

Biron.—What is the end of study? Let me know.

King.—Why, that to know which else we should not know.

Biron.—Things hid and barr'd you mean from common sense?

King.—Ay, that is study's god-like recompense.

Study in childhood at least should be for another and a far more important purpose. The mere accumulation of ideas is, as a whole, of secondary importance. A well-cultured mind is one that is strong and skillful in action, one that has acquired the power to feel acutely, to observe closely and correctly, to think clearly, forcibly and logically, to judge rightly and to carry unflinchingly into practice all good intentions.

The plan of mental culture in force in most of our schools serves rather to repress than to bring into play the various mental faculties. The majority of teachers seem to be unaware that it is impossible to make children wise by cramming them with learning. One may know a great deal and yet be a fool. Cowper rightly says :—

“ Knowledge, a rude unprofitable mass,
 The mere materials with which wisdom builds,
 Till smoothed and squared and fitted to its place
 Does but encumber when it seems to enrich.”

A child whose mind is not trained but merely crammed will be little improved by his education. Such a one will grow up with faculties little, if any more useful than if they had been entirely neglected. His eyes and other senses and his mental powers generally will be feeble in action. In fact, he has not been educated at all, he himself has not been cultivated. Moreover what has been crammed into him will be forgotten almost immediately. Nine-tenths of all that he has hastily appropriated will have vanished completely within a year after he has quit school.

In his interesting “Autobiography,” John Stuart Mill speaks as follows on the subject in question: “Most boys or youths who have had much knowledge drilled into them have their mental capacities not strengthened but overlaid by it. They are crammed with mere facts, and with the opinions or phrases of other people and these are accepted as a substitute for the power to form opinions of their own. Mine was not an education of cram. My father [his tutor] never permitted anything which I learned to degenerate into a mere exercise of the memory. He strove to make the understanding not only go along with every step of the teaching but if possible precede it. Anything which could be found out by thinking I never was told until I had exhausted my efforts to find it out for myself.”

THE BASAL PRINCIPLE OF MENTAL CULTURE.

Exercise is the basal principle of mental culture. It is through it that the faculties of the mind gather strength and become skillful in action. The only way to learn to observe well is to observe; the only way to learn to reason well is to

reason ; and so on. On this subject Locke says, in his work, "The Conduct of the Understanding," "It is practice alone that brings the powers of the mind as well as those of the body to their perfection. Many a good poetic vein is buried under a trade and never produces anything for want of improvement." Use affects the mental just as it does any of the physical powers ; and the same is true of disuse. But in culturing the mind let it be remembered that it is not great and exhaustive exercise which is followed by the best result. It is not wrestling occasionally with marked difficulties which tends most to improve reason, or any faculty ; it is by contending frequently with difficulties which can be overcome without pronounced strain. Keeping a pupil racking his brain over very hard problems is not the proper way to prepare him to solve them.

WHEN MENTAL CULTURE SHOULD BEGIN.

The idea that mental culture should not be begun early still lingers in many minds. Why it should ever have existed it is impossible to tell. Spencer remarks, "It was the opinion of Pestalozzi, an opinion which has ever since been gaining ground, that education of some kind should begin from the cradle. Whoever has watched with any discernment the wide-eyed gaze of the infant at surrounding objects knows very well that education does begin thus early whether we intend it or not." Children begin to learn as soon as they become conscious to any degree, or in other words as soon as they are born ; they enter the great school of experience at the very moment they enter the world. When the first sensation is experienced the process of education has begun.

Now, every one who is possessed of an ounce of common sense should know that by the time learning has begun it is time to begin to teach, that is to direct the exercise of the mental faculties. Thus as Rousseau, whose ideas in regard

to mental culture were in many respects admirable, remarks, "as soon as a child begins to distinguish objects a proper choice should be made in those which are presented to him." I repeat, the training of the mind cannot be begun too early. At any rate most children learn more before they are five years of age than during the remainder of life.

However, I am ready to grant that it is unwise to subject children early to school-training as it is usually practiced. Confining them for four, or five hours day after day to unhealthful rooms and forcing them to yield their attention to books is doubtless extremely injurious to them. Indeed, I am unable to imagine anything more calculated to stunt both body and mind. But if school-training were done naturally or in accordance with the principles of healthy development and growth of the entire organism, physical and mental, and the special requirements of each pupil were considered the reverse of this statement would, of course, be true.

There is one feature of the subject in question which may fitly be dwelt on here and it is, that the length of time which children on the average can study with advantage varies with the age. This matter has not yet received the attention which it deserves. Mr. Chadwick, of England, considered it some time ago and came to the conclusion that children of from five to seven years of age could not profitably labor mentally over three hours per day; children of from seven to ten, not over three and a half; children of from ten to twelve, not over four; and children of from twelve to sixteen, not over four and a half. Moreover, the length of time which children ought to study daily should be different for either sex after the tenth, or eleventh year, because there is then a difference in the rate of growth of the two. On this point more will be said later. Our school authorities seem to be almost totally oblivious to these facts.

But the length of time which may be passed profitably in

study daily by a child of any age depends considerably on circumstances. The way in which the teaching is done has an important bearing on it. Thus the plan pursued in a sensibly conducted kindergarten exhausts but little compared with that pursued in an ordinary primary school. Again, if there is some variety in the themes taught the mind will not become wearied nearly so soon as if there is none. And again, if the mind be applied uninterruptedly for four hours it will be more enfeebled than it would be were an hour spent in play after the first two of study.

MENTAL PRECOCITY.

The mental faculties of some children unfold so fast that it is well to repress them. Such children are, perhaps, always defective physically. In all it is the muscular and not the nervous system which calls for stimulation.

Many parents are disposed to encourage precociousness; yet they could not do anything more unwise. As a rule, the children who are extremely bright do not turn out to be superior men and women. Roger Aseham rightly remarks, "Those which be commonlie the wisest, the best learned and best men also when they be olde, were never commonlie the quickest of witte when they were yonge." And again, "Quicke wittes commonlie be apte to take, unapte to keepe." The brightest youth by far that the writer came into contact with in the course of his school-days has not only not redeemed the promise of his spring, but, sad to say, has degenerated to the verge of imbecility.

HOME-CULTURE OF THE MIND.

One of the many truths to be found in the "Republic" of Plato is this: "The most important part of education is right training in the nursery." The training which children receive at home has more to do in developing and shaping their

mental traits than all which is usually received in the schools. It is at home chiefly that the character is formed. The home-training bears from the first on the conduct; it deals with the every day sentiments and acts. The ideas and ways learned by children in their daily intercourse with their parents are apt to be so thoroughly grounded in their nature as to cling for life.

By satisfying the natural questionings of children an infinite amount of practical information can be imparted to them. Their curiosity to know the names and the nature of things should always be gratified; and no pains should be spared to excite their thirst for knowledge. Evidently it is greatly to their advantage to have intelligent, sensible parents.

In teaching children the following conclusions arrived at by Spencer should be borne in mind: "Education should proceed from the simple to the complex; from the concrete to the abstract; from the empirical to the rational; and self-development should be encouraged to the utmost."

PUBLIC SCHOOLS AND THEIR WORK.

Schools deserve to be favorably regarded by every one; and everything which wisdom can suggest should be done to make them fulfill perfectly their great purpose. For the educational are, perhaps, the most important interests of a nation. The founder of the State of Pennsylvania well said in his Declaration, "That which makes a good constitution must keep it, viz: men of wisdom and virtue, qualities that because they descend not with worldly inheritance must be carefully propagated by virtuous education of youth, for which spare no cost; for by such parsimony all that is saved is lost."

Most of the States of the Union have in operation a system of free public schools. But nevertheless a very large number of children are allowed to grow up without any schooling. Nor do many receive more than the merest rudiments of edu-

cation. In a recent review of the work of the public schools of Philadelphia it is said: "In the year 1878 there were but one thirty-third of the public scholars enjoying high-school instruction, if we include the senior classes of the grammar schools—without them but one seventy-fifth; that but one-fifth are in the other grammar grades and the remainder, nearly four-fifths are in the lowest grades, where are taught reading, writing, arithmetic and American geography and nothing else but the very practical subjects involving no text-books, of drawing, singing, physical exercises and good behavior. The records of at least the last eight years show very slight variation in these proportions."

The whole period of education of children in the public schools throughout the country averages only about three years. From this it would seem that the young of our day are in general not being excessively enlightened.

MENTAL CULTURE IN PRIVATE AND IN PUBLIC.

Although the air of school-rooms is generally unhealthful and the plan of teaching does not conform well to the individual peculiarities and requirements of each pupil, yet I believe it is much better for a child to be educated with others than alone. Through their association with one another children learn much of the ways of the world and gain both fortitude and self-reliance. Says Goldsmith, "A boy will learn more true wisdom in a public school in a year than by a private education in five. It is not from masters but from their equals youth learn a knowledge of the world; the little tricks they play each other, the punishment that frequently attends the commission, is a just picture of the great world; and all the ways of men are practiced in a public school in miniature. It is true a child is early made acquainted with some vices in a school, but it is better to know these when a boy than be first taught them when a man; for their novelty

then may have irresistible charms." On this subject *The Spectator* says, "A private education seems the most natural method for the forming of a virtuous man; a public education for making a man of business. The first would furnish a good subject for Plato's Republic, the latter for a member of a community over-run with avarice and corruption."

ON THE AGE AT WHICH TO ENTER SCHOOL.

As the reader may infer from some remarks made above, the age at which children should be sent to school is variable. Those that are feeble should not be sent as early as those that are strong. Then, the method of teaching must be taken into consideration. From the sixth to the seventh year is certainly soon enough for children to begin to attend any of our ordinary schools, that is, those in which learning to read is the chief aim for the first two years, or so. Experience goes to show that in them the average pupil who begins to attend at seven years of age will be further advanced at nine than one who begins at five. From this it would certainly appear that early attendance in them is harmful to the mental powers. Rousseau was not very far wrong in keeping his ideal pupil, Émile, free from the infliction of artificial learning until he was twelve years of age.

THE KINDERGARTEN METHOD OF EDUCATION.

The peculiar infant schools called kindergartens, which are increasing in popularity, are deserving of attention. The method of teaching pursued in them is in the line of realization of an excellent precept of Plato, namely, "Let early education be a sort of amusement."

In kindergartens the pupils spend most of the time in "occupations" (*i.e.*, weaving, folding, embroidering, cutting, etc.) and upon "gifts" (*i.e.*, mathematical lessons in number and form conducted with the use of blocks of various shapes

and sizes). In some much attention is paid to the study of surrounding objects, both natural and otherwise, and to the performance of acts of a useful nature. Through them not only valuable instruction and manual dexterity may be gained, but what is of still greater importance, good tastes and habits.

The kindergarten or "garden of children" was originated by a German educator named Fröbel, who was born in 1782 and died in 1852. The first one was instituted at Blankenburg in 1837. Fröbel gathered many of his views from Pestalozzi, a celebrated Swiss teacher who was born in 1746 and died in 1827. He held with Pestalozzi that the function of education is to develop the faculties of the mind through exercise; but he also held that the exercise should be voluntary on the part of the pupil. Action proceeding from inner impulses or self-activity he regarded as the one thing needful. His plan of teaching was derived largely from a close study of the natural unfoldment of the mental nature; and he very properly directed special attention to the improvement of the very young. His work, "The Education of Man," which was published in 1826, deals mainly with the education of children under seven years of age. From observing the games in which children take pleasure he drew up a graduated scheme of exercises; and he intended that the pupil in engaging in these should be made to feel that he is at play. But it is not necessary to follow any stereotyped plan. As Fröbel himself says of the kindergarten, it is "to give the children employment in agreement with their whole nature, to strengthen their bodies, to exercise their senses, to engage their awakening mind and through their senses to bring them acquainted with nature and their fellow creatures; but it is especially to guide aright the heart and the affections, and to lead them to the original ground of all life, to unity with themselves."

THE CHOICE OF KNOWLEDGE.

Of course, it is proper for every child to learn to read and write. Both these arts are of inestimable value to every one. But learning to read and write is not acquiring knowledge; it is only acquiring the ability to learn the written, or printed ideas of others and to convey one's own by signs or symbols, by words on paper, or the like. And here I may remark that, doubtless, too much time is spent in the schools on mere word-knowledge or language. Names are nothing more than the labels of things and their properties and relations and of actions, or in other words of ideas. To know several tongues, then, is to know several ways of naming and expressing ideas. It is not uncommon for pupils to know the names without knowing the ideas for which they stand.

But apart from the acquirement of the means, the instruments of learning, the choice of knowledge is a matter of the highest importance. What is most useful is evidently the best; for as Mr. Spencer says, "to prepare us for complete living is the function which education has to discharge." Yet in our schools it is customary not to teach, or rather to attempt to teach much that has any bearing on every-day life. In respect to this Mrs. Browning makes Aurora Leigh, the chief character of her work of that name, speak sarcastically as follows:—

" I learnt the royal genealogies
Of Oviedo, the internal laws
Of the Burmese Empire, * * * by how many feet
Mount Chimborazo outsoars Teneriffe,
What navigable river joins itself
To Lara and what census of the year Five
Was taken at Klagenfurt—because she liked
A general insight into useful facts."

Few, or none have either the time or the talent necessary to learn everything; so that which is of the most practical value should be learned first. It is better to be able to name the

flowers which grow in the garden than the peaks of mountains in Mexico. It is better to know the relations of life to the atmosphere than the rules by which to calculate the changes of the moon.

It may not be amiss to remark here that it is infinitely more desirable to know a little and know it well than to know much and know it poorly. A thorough familiarity with one subject is better than a mere acquaintance with a dozen. Unless what one has learned can be reproduced and utilized it is practically of no account. Only what one learns well by little and little is appropriated. But the self-confidence which springs from a consciousness of having a thorough knowledge of a subject is of quite as much importance as the knowledge itself. Besides, when one department of knowledge is mastered it conveys a liking for others. And indeed all knowledge is connected, or as the celebrated French educator, Jacotot liked to express it, "all is in all" ("*tout est dans tout*"). One cannot know one science well without having an insight into all.

SEX, AND MENTAL CULTURE.

I believe it is wise and proper for children of either sex under ten years of age to be educated together. The rudiments of learning taught then are generally speaking of equal value to both. Moreover, the influence of the one on the other is beneficial; it inspires not only better conduct but better sentiments. So far as capacity is concerned they are pretty fairly matched.

After the tenth year of age is passed it is wrong to subject children of either sex to similar training. At this period they begin to differ; they begin to be both physically and mentally markedly unlike. Their rate of growth then varies greatly, as has been pointed out elsewhere. This alone is a sufficient reason why they should be educated apart. On this point Dr. Bowditch says, "How far should the difference in their rate of growth

be allowed to modify the system of mental training to which the children of the two sexes are subjected? The physical conditions upon which the manifestations of mental activity depend are too little understood, and the whole question is too complicated to be discussed in this connection, but it seems to be almost self-evident that at those periods when the forces of the organism are engaged in producing rapid growth and development of the physique the requirements in the way of mental effort should be reduced. The fact that these periods occur at different ages in the two sexes may therefore be regarded as an argument against the co-education of boys and girls, except during the earlier years of life, in which the rates of growth are practically the same; *i.e.*, up to ten, or eleven years of age. How much importance is to be attached to this argument is a question which demands for its solution an extended series of observations on the annual growth in height and weight of a large number of individuals taken in connection with a record of their mental progress."

Aside, however, from all other considerations it is unwise, it is foolish to induce adolescent children of either sex to study the same subjects. A boy should be taught such things as will likely be of most benefit to him when he reaches manhood and a girl should be taught such things as will likely be of most benefit to her when she reaches womanhood.

CHAPTER II.

THE CULTURE OF THE FEELINGS.

*Preliminary Remarks—Love—Reverence—Hope—Fear—
Cheerfulness—Anger—Fortitude—Resignation—Animal
Propensities.*

PRELIMINARY REMARKS.

Feelings arise from impressions made on the various organs of sense and diffused in the brain. They are, therefore, closely connected with the physical side of the organism.

Feelings which originate objectively, that is, from impressions made directly by external objects are sometimes spoken of as EMOTIONS, and those which originate subjectively, that is, from impressions originating within the system, as PASSIONS. What are commonly called APPETITES are related to both these, but especially the latter.

On the force of the impression made on the organ of sense depends the degree of feeling excited. If the impression be repeated the degree of feeling excited grows less, the consciousness produced becomes less vivid. By continued action the nerve-fibres and corpuscles are exhausted and their power can be restored only through rest and nourishment. Change, then, has an important bearing on the excitation of feeling; indeed it is the groundwork of it and of intellect too. We are scarcely aware of the pressure of the atmosphere; for the reason that the changes which occur in it are so slight as not to be easily appreciated by the senses. If the temperature were always the same no idea of grades of it would occur to the mind. Hence, the effect of monotony in the course of events is depressing. There is a natural tendency to seek for variety. Cowper writes —

“The earth was made so various that the mind
Of desultory man, studious of change
And pleased with novelty might be indulged.
Prospects however lovely may be seen
Till half their beauties fade; the weary sight
Too well acquainted with their smiles slides off
Fastidious, seeking less familiar scenes.”

Feelings are either pleasurable or painful. Pleasure springs from a rise, an exaltation of nervous action or vital power and pain from a fall, a depression of it.

Healthy exercise and also rest after toil cause pleasurable feelings. But excessive stimulation of the vital functions may cause pain by oppressing the sense. A like effect may follow when there is a conflict in the stimulation. The fatigue of some organs is more painful than that of others.

Some unpleasurable feelings may be beneficial indirectly. Thus the effect of a cold-bath is bracing to the system; but it is so only after a longer or shorter period of depression has passed away.

The feelings are reflected by the expression of the features, the voice and the movements or gestures of the entire body. The mind is mirrored to some extent in the exterior. To the artist every feeling has its peculiar outward sign, or signs.

The feelings in early infancy are comparatively limited in scope and are but slightly developed. Until the senses begin to act the child is not alive to any extent to any but the sensations aroused by want of food, or physical injury, and to these not acutely.

The teacher should thoroughly appreciate the import of pleasurable and of unpleasurable feelings. This was done by the Edgeworths, who in their long-popular work on popular education say, “The general principle that we should associate pleasure with whatever we wish that our pupils should pursue and pain with whatever we wish that they should avoid forms the basis of our plan of education.”

LOVE.

Love may be defined to be a passionate attachment to any thing. As a feeling it is of an agreeable nature. It is an impelling force, a power which may be sufficiently strong to over-master the intellect. When infused with it people may, both individually and collectively, manifest an almost super-human capacity for good, or evil. Of the numerous directions in which it may develop I cannot attempt to speak. I will, however, make some remarks on a few of them.

LOVE OF SELF is severely condemned by some. I hold, however, that a reasonable amount of it is very desirable. Those who are deficient in it are generally of secondary importance in the world. But I do not mean to convey the idea that very much of it is a trait of character which should be esteemed. An excess of it usually carries with it a growing propensity to have little consideration for others; or in other words, an overweening self-love tends to degenerate into rank selfishness. It is a fault which should not be nursed.

An only child runs a great risk of having self-love excessively developed. Apart from the behavior of parents, when there are several of a family each member of it is kept in mind by the rest that others too have feelings, preferences and rights and in this way a habit of considering those feelings preferences and rights is formed. Without this habit one will find when cast among others that his lot is anything but pleasant.

LOVE OF BEAUTY is a worthy feeling. Plenty of field is there for its indulgence. The world is beautiful and full of beautiful things.

The capacity to appreciate the beautiful may be developed and refined to a high degree. Ruskin says, "The sensation of beauty is dependent on a pure, right and open state of the heart both for its truth and its intensity." On the principle that it is a perfect mind only that can be alive to perfection

the same author remarks that "beauty has been appointed by the Deity to be one of the elements by which the human soul is continually sustained."

There are certainly plenty of reasons why the feeling for the beautiful or æsthetic sensibility should be cultivated. In this way it is possible to greatly augment joy and happiness. Nature's myriad works and all the productions of art should minister to human delight and enable one to banquet constantly on pleasures. Springs of enchantment may be found overflowing on every hand. Every bud and blossom, every lawn and landscape, every picture and statue—whatever comes within the range of the senses invites attention and proffers charms which may give zest and sweetness to life. Thus all things may pay tribute to every one's welfare and be in a manner claimed as his own.

LOVE OF TRUTH should be assiduously instilled into the young; for it is one of the fundamental elements of a noble character. It is to be feared that this virtue is often more told of than taught. Under no circumstances should anything but truth be spoken. All exaggeration should be checked; for it is a step in the wrong direction. Once a habit of diverging from accuracy in speaking of things is developed it is hard to limit one's self to simple facts. As said by the celebrated Dr. Samuel Johnson, "it is more from carelessness about truth than from intentional lying that there is so much falsehood in the world."

By placing confidence in a child's veracity and honor self-respect is fostered. Hence suspicion of untruthfulness has a bad effect. Until there is good reason to believe that a falsehood has been told all accusation should be withheld. But it is unwise to let a single instance of either prevarication or untruthfulness pass unnoticed. If the fault is known the evidence of it should be advanced; and a full confession of guilt should be exacted.

LOVE OF RIGHT OR JUSTICE should be earnestly and perseveringly inspired in the young. This virtue cannot receive more homage than it deserves. It is ill-appreciated by too many; and by not a few it is set at naught. There is not that unflinching adherence to it prevailing which there ought to be. Cheating and fraudulent acts of all kinds are systematically practiced by multitudes of people. There is reason to doubt that the average man can cast his eye heavenward, put his hand on his breast and say from his heart as Milton once did to his wife, "My wish is to live and die an honest man." Public opinion is too lenient to the unprincipled. So much so is this the case that one is tempted to exclaim in the words which Shakspeare puts into the mouth of the rogue Autolycus, "I see this is the time that the unjust man doth thrive!"

Children should be treated justly, so that the example may give emphasis to the precepts inculcated. It is worse than useless to moralize on the excellence of right if one's actions are not in accordance with it. Yet this is common.

Treating particular members of the family differently from the others is a form of injustice which is far from being rare.

The elder children should not be allowed to practice the injustice of domineering over the younger. This practice is sure to beget discord and not infrequently leads to worse evils.

LOVE OF DOING GOOD or BENEVOLENCE is a splendid virtue. Goldsmith speaks of doing good as a luxury and indeed it is very largely such. The satisfaction which arises from the performance of deeds of kindness is among the most pleasurable of feelings.

If in doing good one has not to practice any self-denial it is not as commendable as when the opposite is the case. Little acts of courtesy which call for some self-sacrifice manifest best the condition of the heart.

Personal attention to the sick and liberality to the poor are

forms of goodness which the young should be taught to appreciate. A desire to minister to the infirmities and pressing wants of others is a highly adorning trait in the character. Galen pronounced a magnificent encomium on Hippocrates in saying, "There was but one sentiment in his soul and that was the love of doing good, and in the course of his long life but a single act and that was the relieving of the sick."

LOVE OF COUNTRY or PATRIOTISM has always been regarded as a virtue. Undoubtedly it is a desirable sentiment; but it is liable to be excessively developed. When it is present in such a degree as to blind one to all that is admirable in other places it is objectionable. The motto, "My country right, or wrong" is a product of insane patriotism.

While on a visit to this country many years ago Miss Martineau observed that "children were brought up to talk politics before they could be qualified to have an opinion and taught at school to despise other nations and glorify their own." Possibly this statement still holds good, to some extent. However, through increasing intercourse, which is greatly promoted by the use of steam as a motor and of electricity as a messenger of intelligence, people all the world over are growing more sympathetic toward one another; they are fast substituting friendly for unfriendly feelings and learning to be sincere when they speak of the universal brotherhood of mankind.

LOVE OF DRESS is often developed to an inordinate degree. Pandering to it brings many a family to ruin. In some girls it is so marked that they can hardly turn their thoughts to anything else. And it is better on the whole that this taste should be in excess than the reverse; for untidiness in any one, but especially a girl, is a disgrace. Still Ecclesiasticus is right in saying, "Glory not in apparel at any time."

LOVE OF MONEY is seldom very strong in early life. To be sure it is ardently enough desired but it is not for itself

but for what it will purchase. I think it is wrong to teach children not to appreciate it. Thrift is a virtue, whereas the extravagant use of money slopes the way to innumerable vices. Goldsmith expresses very good sentiments on the subject; he says, "As boys should be educated with temperance, so the first greatest lesson that should be taught them is to admire frugality. It is by the exercise of this virtue alone they can ever expect to be useful members of society. It is true lectures continually repeated on this subject make some boys when they grow up, run into an extreme and become misers; but it were well had we more misers than we have amongst us."

REVERENCE.

Reverence may be defined to be a respectful regard for anything that is good, or sacred. It is closely related to veneration. Like all other feelings it may be either too well or not well enough developed. Those having it in excess are generally deficient in the qualities which establish self-respect and self-confidence.

Reverence for their parents should be grounded in the hearts of all children. Unfortunately there are boys and girls too who possess but little of this feeling. Not a few are in the habit of speaking of their father as "the old man," or "the governor," and of their mother as "the old lady," or "the old madam;" and they do not hesitate to disobey, bully and otherwise abuse both. How forgetful people can be of benefits received! It is sad to think that after nurturing and caring tenderly for a child during his helpless years one may be treated contemptuously and harshly. Such treatment can under no circumstances be justifiable. But that parents not infrequently have themselves to blame for it is not at all doubtful. Bad training is sure to bear sorrowful fruit.

Reverence for the aged is a virtue which should not be overlooked in training the young. No one whose mind has

been properly cultured can look on a human being who is approaching the limit of the period of existence without experiencing any unusual feeling. Only exceptionally bad boys, or girls, I fondly believe, would wantonly treat such a person with disrespect; and these are not entirely undeserving of the fate which we are told befell those who acted thus toward Elisha.

Everything that is good should be regarded with reverential feelings. There are, unfortunately, some among the immature who are so lost in themselves that they can see no good in others and who are so obtuse mentally that nothing can inspire in them a sense of awe. These cynical specimens of defective humanity are deserving of considerable pity; for assuredly they have been ill-trained.

It may not be amiss to speak in this place of BLASPHEMY or the use of profane language. This form of irreverence is practiced, as every one knows, to a great extent. Multitudes seem to take pleasure in taking "the name of the Lord" in vain in spite of the commandment against it with which nearly all are familiar. This is especially true of many adolescent boys; and these often do it because they think that it will make them seem manly. But there is nothing manly about profanity. Nor is language saturated with it called for under any circumstances.

Profanity and indeed all other species of vileness of speech should not be tolerated in children. This is a matter about which too many parents are apt to give themselves little trouble.

HOPE.

Hope or the power to look forward to the enjoyment of better things is an excellent trait of character. Armstrong speaks of it as "the balm and life-blood of the soul" and as "our greatest good and what we least can spare." The pathway of life of but few is just as one would wish it to be; to

many it is hilly, rough and hard to pass along ; and hence it is wise to foster this buoyant faculty, and make it so that it will be indeed as Byron writes—

“ The rainbow to the storms of life,
The evening beam that smiles the clouds away
And tints to-morrow with prophetic ray.”

Hopefulness is a source of strength ; it is one of the main-springs of human action. A mind that resists discouragement and yields not under troubles is a valuable possession. It is said that on starting on his campaign in Asia, Alexander the Great bestowed all his property on his friends and being asked what he reserved for himself replied, “ Hope.” A timorous, easily dejected person is not likely to rise in the world, or to become distinguished for great works. That is a fine verse of Tennyson’s which reads—

“ The mighty hopes that make us men.”

Despondency is an evil which should not be encouraged. It can do no good. The troubles one has to contend with cannot be dissipated by it ; or as is said by one of Shakespeare’s characters “ none can cure their harms by wailing them.”

A brooding spirit in early life indicates that something is wrong ; for it is unnatural. It is not infrequently marked at, or soon after the age of puberty. At that period especially is it a signal of unhappiness which should not be neglected. On noticing that their children are thus affected, parents should inquire into the cause of it, and then remove it if in their power. As a rule, it will be found that it springs from the entertainment of distorted ideas about some matter or other, and that sensible advice will lead to the discontinuance of it. Boys and girls may, doubtless, have some unimaginary grievances to bear, but there is generally no very sound reason why they should spend any time in morbid musing, or why

they should not be always ready to exclaim in the words of Mrs. Norton—

“ Though at times my spirit fails me,
And the bitter tear-drops fall,
Though my lot is hard and lonely,
Yet I hope—I hope through all.”

FEAR.

Fear or a dread of the coming of evils, when in excess is a rich source of unhappiness. Armstrong characterizes it as “the last of all our evils.” It is one of the frailties of human nature which tend to increase if they are not actively opposed. An enlightened reason, or what is much akin, self-confidence, is the chief antidote to it.

Extreme timidity is a sorrowful infirmity ; it is a serious defect in the character. A person who is constantly in dread of danger cannot derive much pleasure from living. Some children are so easily terrified that they are often in a state of misery. Miss Martineau was one of this class. Says she, “I was as timid a child as ever was born ; yet nobody knew, or could know the extent of this timidity ; for though abundantly open about everything else, I was as secret as the grave about this. I had a dream at four years old which terrified me to such an excess that I cannot now recall it without a beating of the heart. I could not look up at the sky on a clear night ; for I felt as if it were only just above the tree-tops and must crush me. I could not cross the yard except at a run, from a sort of feeling with no real belief that a bear was after me. The horrors of my nights were inexpressible.”

Children should not be subjected to sudden alarms, or have their imaginations disordered by terrifying stories. They should not be told of ghosts, murders, horrible diseases, or anything else the contemplation of which would depress their spirits ; for it will cause their minds to waver and produce

timidity. Neither should they be frightened into doing anything nor mystified for any reason.

It is not either natural or right for children to live in dread of their parents. If such a feeling exists, measures should be taken to banish it without delay. A child that is constantly in apprehension of impending suffering of some sort will inevitably deteriorate in character. Between him and his parents there should be the utmost confidence.

Many children are afraid of their teachers. This should never be the case. Usually there is little or no cause for it. At any rate while it exists the mind is not in a favorable condition for the acquisition of knowledge, or improvement in any way.

CHEERFULNESS.

Cheerfulness is an excellent trait of mind. In Proverbs it is said "A merry heart doeth good like a medicine." It is a stimulant; through the influence of it the blood circulates better and all the functions of the body are rendered more active. Sancho Panza was not far wrong in saying, "He who sings frightens away his ills."

A melancholy frame of mind is a heavy infliction, especially in early life. Ecclesiasticus says "Sadness hath killed many and there is no profit in it." And again, "Pensiveness will bring old age before the time."

Some, I am sorry to say, exert themselves to depress their children mentally; they are striving constantly to keep them still. In his work, "Studies of Nature," St. Pierre remarks in reference to this, "'Be good children' is the perpetual injunction; and this goodness consists in never moving a limb. A woman of spirit who was fond of children took notice one day, at the house of a shop-keeper in St. Denis street, of a little boy and girl who had a very serious air. 'Your children are very grave' said she. 'Ah! madam,' replied the sagacious shop-dame, 'it is not for want of whipping if they are not so.'"

Mirthfulness in the young should not be repressed. It is no harm to laugh. Those who do it most are apt to be the healthiest as well as the happiest; for it tends to make the breathing deep and free and to promote the functional activity of the heart and all other parts of the organism. Then, let the young indulge in it. The merry sounds of it will be beneficial to those around. One cannot listen to them long without catching something of the spirit which prompts them.

Especially should little children be encouraged to be mirthful. Their hearts should be constantly overflowing with joy. Nothing should be said, or done that would make them feel sad. These ideas are finely set forth by Proctor (Barry Cornwall) in his song for a child, for his own daughter Adelaide, who became distinguished as a poet, and called "Golden-tressed Adelaide," which I cannot help quoting here in full.

- " Sing, I pray, a little song,
 Mother dear!
 Neither sad nor very long;
 It is for a little maid,
 Golden-tressed Adelaide!
 Therefore let it suit a merry, merry ear,
 Mother dear!
- " Let it be a merry strain,
 Mother dear!
 Shunning e'en the thought of pain;
 For our gentle child will weep
 If the theme be dark and deep;
 And *we* will not draw a single, single tear,
 Mother dear!
- " Childhood should be all divine,
 Mother dear!
 And like an endless summer shine;
 Gay as Edward's shouts and cries,
 Bright as Agnes' azure eyes;
 Therefore bid thy song be merry; dost thou hear,
 Mother dear?"

ANGER.

Anger or an excited resentful feeling is a mental state which should not be cherished. The frequent occurrence of it is an indication of a morbid condition of the mind, a condition which may be as much due to habit as disease.

But although it is well that the disposition should be placid it by no means follows that a person cannot be excessively void of spirit. Those who cannot be ruffled by an injury need not be expected to be alive to impressions of any kind. Nor will those who have not courage enough to resent an insult ever be distinguished for noble deeds. It is natural to become angry under provocation and it is well that it is so.

Extreme irascibility is frequently the result of disease. When the nervous system becomes irritable the mind cannot be in a calm condition. This should be carefully borne in mind by those in charge of the young; for under the circumstances they should be very forbearant and gentle in their conduct.

Many children's tempers are spoiled by irritating them without reason. Needlessly opposing their wishes, disappointing expectations deliberately excited and reproaching and punishing them for errors not inspired by wrong desires are practices which should be strictly abstained from. A very fertile source of wrathfulness in them is inconstant or variable treatment. Reproving to-day for what was praised yesterday will injure the disposition of the most indifferent.

The example of irritability shown by parents is a great cause of it in their children. If they are constantly letting their tempers "get the better of them," as the phrase runs, how could those under their care be expected to do otherwise? They should never be fretful and cross themselves who expect those they are training to be always free from these faults.

Now, when children become angry it is extremely unwise for their parents to become similarly affected and to oppose

passion with passion. Yet, is not this often done? To subdue their excited feelings, one should be gentle and firm in demeanor and after diverting their attention to something pleasing until they get into a placid mood, advise them in a friendly way of their misconduct. If such a course be pursued they will learn to restrain their feelings.

I may say a few words about *SULKINESS*. This condition is very unnatural to children; they are not inclined to remember injuries long. Nor should it be encouraged. But it is not judicious to attempt to bring them into a state of good humor immediately after reprimanding, or punishing them; it is best to postpone it for a reasonable length of time so as to allow the emotions to somewhat subside.

FORTITUDE.

Fortitude or courage to face and wrestle with difficulties is a praiseworthy quality in children as well as in persons of mature years. It is in some respects the reverse of timidity. A consciousness of force or power is the basal principle of it.

It should never be forgotten by parents that their children must sooner or later rely more or less on themselves. Hence, an enervating system of training should be scrupulously shunned. It is proper to foster a spirit of self-reliance from as early an age as possible, so that they may be prepared to encounter courageously the little pains and misfortunes of childhood as well as the serious trials which are likely to arise in adult life. Murmuring and discontent should always be repressed; for a habit of fretting and crying for trifles is easily formed. Every one will find that "the miseries of this sinful world" are ample enough without being nursed.

Very tenderly brought up children usually turn out to be men and women of feeble character. It is not from license and luxury that the best qualities of the species gather force. If the desirable powers of the mind are not called into play

habitually they cannot be expected to be strong and subtle. Mental independence is the result of continued efforts, just as the art of walking alone is.

When accustomed to rely on themselves children soon display a surprising amount of self-possession and good sense. Some of them appear to be capable of running the gauntlet of all possible perils and dangers without sustaining any harm. Paradoxical as it may seem, yet it is a fact that those who are the most closely watched and guarded are the very ones that oftenest meet with accidents. It is judicious, then, to let them be in a great measure their own keepers. As Dr. Combe says, "the child ought as far as possible to be allowed the choice of its own occupations and amusements and to become the chief agent in the development and formation of its own character. So long as it manifests feelings, desires, and intellectual wants which are in themselves right and proper we cannot in any way contribute to its welfare and happiness as much as by allowing it free scope for their gratification."

Many mothers are prone to favor dependence, to cultivate infirmity of character in their children, under the idea that in this way they can reap an enlarged and prolonged return of affection. Such parents are apt to discover in time that they are anything but blessed in them.

As children grow in years they should also grow in intelligence and wisdom, in independence. From infancy forward the mind should advance in stature gradually, just like the body. A child that increases in size and not in sense is idiotic. The ability to observe and reason should go on improving from birth forward. Between the condition of the mental faculties at five and at ten years of age there should be as marked a contrast as between that of the body at these periods. Hence it is proper not only to expect but to encourage the disappearance of childishness.

But wrong as it is to retard the mental unfoldment of the

young it is, perhaps, still worse to over-hasten it. Attempting to transform boys and girls into men and women prematurely is very sure to be harmful to them and make them objects of contempt. There is, however, a certain indescribable sort of manliness in boys and womanliness in girls which cannot be developed too early.

RESIGNATION.

Resignation or satisfaction with the existing condition of things is in some respects a virtue and in some it is not. It is right to submit willingly to whatever is inevitable. Thus it matters not how seriously the rain this morning upsets my plans for the day there is no reason why I should lament about it. Unreasonable fault-finding is both unwise and useless. One should at least attempt to be happy under all circumstances.

But it is wrong to bend passively to harmful forces which may be set aside, or to be reconciled easily to a lot which admits of improvement. It is a wholesome discontent with things as they are which leads people to undertake all new enterprises. There could be no progress if none were to desire to improve their condition. And fortunately every one can by well-directed efforts satisfy even immoderate cravings for everything which ministers to happiness. Through earnest endeavors one may triumph over great obstacles and attain to even more than ambition may long for. In this great country in which we live, with its laws insuring equal rights to all, the humblest may confidently hope to rise if they will but try, if they will but exert themselves.

It is to no one's advantage to be of a passive, yielding nature. Only through an active, dauntless spirit can glorious deeds be wrought. People who are always in a retiring mood cannot be expected to prove victorious in any enterprise in which they may engage. Tenacity of purpose is the leading trait

of all who achieve greatness. The persevering need seldom be doubtful of succeeding in their undertakings. This is a truth which should be thoroughly grounded in the minds of the young. And they should be taught to put it in practice, to patiently apply themselves until they accomplish any task which is set before them. In their vocabulary there should be no such words as can't and fail. It is by dint of untiring industry that much that is grand can be accomplished in life's brief span. As Longfellow writes—

“The heights by great men reach'd and kept
Were not attained by sudden flight,
But they while their companions slept
Were toiling upward in the night.”

ANIMAL PROPENSITIES.

The animal propensities are generally inclined to become so marked as to call for active repression. Nor should this be altogether regarded as unfortunate; for it is better to be possessed of positive qualities, even that they are not very good, than none at all. It is hard to make much of a child that is not somewhat prone to indulge in excesses.

In his book of advice to his children Penn tells them to be temperate in their diet, “for that is physick by prevention: it keeps, nay, it makes people healthy and their generation sound.” The excessive indulgence of the appetite is in every respect a despicable vice. All children run some risk of gaining a taste for it. Their desires are too generally gratified, and not only gratified but pampered. Pressing them to eat when they have indulged sufficiently is a habit which mothers should not acquire. Those that are taught to be very fond of good eating are usually doomed to experience trouble and are not likely to become distinguished for much that is praiseworthy. Well indeed does the wish expressed by Burns for his countrymen in that fine poem, “The Cotter's Saturday Night,” deserve to be thought over—

“ May Heaven their simple lives prevent
From luxury’s contagion, weak and vile !”

TEMPERANCE not only in eating but in everything else cannot be regarded with too much favor. The immoderate gratification of their appetites is the besetting sin of most people. The intemperate use of alcoholic liquors is one of the greatest of the curses which afflict the race. And what an irrational, foul habit it is! Well might Shakspeare through Cassius exclaim, “ To be now a sensible man, by and by a fool and presently a beast! O, strange!” Parents should earnestly endeavor to prevent their children from contracting this terrible vice.

It is to be regretted that the word temperate is used popularly to express the idea of total abstinence from alcoholic beverages. A temperate man is not one who abstains entirely from anything, but one who has no desire for whatever is injurious. Plato remarks, “ He who knows the temperate life will describe it as in all things gentle, having gentle pains and gentle pleasures, and placid desires and loves not insane.” Unfortunately a tendency to excessive self-indulgence is very prevalent. Few there are who have a complete mastery over themselves. To generate this power should be one of the chief aims in view in culturing the minds of the young.

CRUELTY is a species of vileness which cannot be too forcibly condemned. Any one who needlessly inflicts pain on another, or on any creature is void of one of the finest traits of the human mind. Doubtless it is generally more from want of thought than deliberate wickedness that children practice it. Every one dreads suffering and consequently should have no desire to cause it; the recollection of the Golden Rule should be sufficient to deter the worst from acting so depravedly. And it should be understood by all that there is not a being in existence which may be injured at will without feeling hurt. Indeed there is reason to believe

that the sensibility of most animals is just as acute as that of man.

It is but right for parents to teach their children to recoil from cruelty of every kind, to abhor wanton injury of even the most lowly thing which crawls at their feet. Far from being beyond question is the philosophy which proclaims that, as Pliny expresses it, "for man's sake all other things appear to have been produced by Nature." But although no one need be made to believe with Ovid that "all things have an equal right to live," yet every one should be taught that it is villainy, that it is sinful to causelessly give pain to the humblest animal which exists. If a habit of acting cruelly to animals is allowed to grow, it is easy to lapse into acting similarly to human beings. The boy who can injure a bird without experiencing any compunction of conscience would likely injure a horse without much hesitation; and the boy who can injure a horse without hesitation would not likely be very sensitive about injuring his fellows.

FIGHTING is a base practice. A desire to indulge in it, to resort to force in retaliation for any injury sustained is a usual accompaniment of an irascible disposition. The tendency to it should be combated early. A pugnacious person is very certain to sooner or later have reason to regret the possession of his wicked propensity.

CHAPTER III.

THE CULTURE OF THE INTELLECT.

*Preliminary Remarks—Observation—Reading—Reasoning—
Imagination or Fancy.*

PRELIMINARY REMARKS.

The nature of the intellect is an interesting subject, but one which is by no means easy to fathom ; which facts account for the great extent as well as the miserable quality of the literature of it.

Synonyms, or very nearly so of the word intellect are THOUGHT, REASON and UNDERSTANDING.

The intellectual operations of the mind proceed so imperceptibly that it is not at all strange that people in general suppose that they have no connection with the physical organization, that they are carried on through pure spirit. Beyond all doubt, however, they are carried on by means of material organs, by the brain and the several senses. Careful observation indicates that they are very destructive of matter, of blood, of which, by the way, about one-fifth of all in the body circulates in the head. From them the brain grows weary just as surely as do the muscles of the arm from manual labor. But I need not dwell here on this theme, for it is treated of with sufficient fullness elsewhere.

Like feelings, the thoughts are excited by the differences of things. Knowledge is a record of relations. Nothing can in itself be known. Heat and cold, up and down, white and black are relative things. Heat is known because of its difference from cold ; black is known because of its difference from white ; and so on. And so it is also in respect to the

morality of actions. Good acts are recognized as such because of their unlikeness to bad ones.

The intellect consists of three ultimate faculties, namely, the sense of difference, the sense of similarity and the memory.

THE SENSE OF DIFFERENCE or the power of discrimination is an initial faculty of the mind. By it the contrasting features of things, including actions are noted. Through cultivation it may become wonderfully acute. Thus the cultured eye is capable of distinguishing thousands of shades of color.

It is principally in the ability to recognize distinctions or peculiarities in things that the grades of talent of people consist. And the development of this ability in every one is gradual. At birth the child knows nothing; not one of the impressions made on his senses can he distinguish; he cannot identify aught. Soon, however, he begins to notice differences and as time passes on he becomes alive to more and more.

THE SENSE OF SIMILARITY, as a faculty, is the power by which likeness or agreement in things is recognized. It is by means of it that one takes cognizance of the resemblance of things to one another, that one identifies them. Through it old ideas are reproduced; and hence it is somewhat similar to imagination in meaning. By either it or the sense of difference all knowledge is collected; these are the only faculties by which original ideas can be gathered.

The power to recognize likeness in things is acquired by degrees. The child at birth can no more trace resemblances than differences. To him at first each impression made on the eye, the ear, or any of the senses is an independent one. In the course of time he learns through repetition to recognize what he has before observed. His nurse becomes familiar to him by seeing her again and again. The idea of her individuality is formed and fixed by taking notice of her repeatedly.

In an essay on the culture of the observing powers of children, which forms the introduction to a little book on botany, by Miss E. A. Youmans, of New York, it is rightly said, "As to know a thing is to perceive its differences from other things and its likeness to other things, it is, therefore, strictly an act of classing. This is involved in every act of thought; for to recognize a thing is to classify its impression or idea with previous states of feeling. Classification in all its aspects and applications is but the putting together of things that are alike, the grouping of things by their resemblances; and as to know a thing is to know what it is like and what it is unlike, we begin to classify as soon as we begin to think. When a child learns to know a tree, for example, he discriminates it from objects that differ from it and identifies it with those that resemble it; and this is simply to class it as a tree. When he becomes more intelligent regarding it—when, for instance, he sees that it is an elm, or an apple-tree—he simply perceives a large number of characters of likeness and differencee."

THE MEMORY or the power of continuing in the mind impressions which are no longer stimulated by the original agent and of recalling them at after times by purely mental forces is the basis of intellect. In absence of this faculty one could never be otherwise than like a new-born infant mentally.

The memory of special ideas appears to be seated in the same parts through which they were originally produced. Recalling a particular relish arouses something of the same taste. Undoubtedly the entire system is in intimate alliance with this and all other powers of the mind. Through thought it is possible to bring about marked changes in the organism. Dwelling intently on certain morbid conditions will give rise to them.

The more marked the impression made on the mind is the more lasting will it be. Anything of which one becomes vividly conscious will not be readily forgotten. Hence the

attention should be brought to bear intently on whatever one wishes to memorize. Repetition of an impression serves to render it indelible.

As a rule, the young can commit anything to memory faster than the old. This power is at its maximum at about the fifteenth year of age. It is somewhat more marked in females than males; and in the illiterate it is, perhaps, usually greater than in the educated. Impressibility has much to do with it. Evidently this is why it is greater in the morning than in the evening.

The memory is not of unlimited capacity. The learned are all well aware that it can contain but a small part of what is known. As remarked by Mr. A. Bain, a distinguished writer on mind, "a wide scholarship turns into a knowledge of places where knowledge is." It is probable, that, as a rule, the larger the brain is the greater is the capacity of the memory.

INSTINCTS are inherited acquisitions. Mr. Darwin remarks, "A belief constantly inculcated during the early days of life while the brain is impressible appears to acquire almost the nature of an instinct, and the very essence of an instinct is that it is followed independently of reason." This important matter will be dwelt on elsewhere.

OBSERVATION.

Observation or the acquisition of ideas through the senses is the original source of all our knowledge of Nature. What is not learned in this way is generally not well understood. Indeed it is scarcely possible to gather a correct comprehension of anything from reading, or hearing about it. A better idea of the appearance of any flower can be gained at a glance than from a lengthy description of it; and one may hear a great deal about it without becoming able to identify it when seen. "You study Nature in the house," said the late Prof.

Agassiz, "and when you go out of doors you cannot find her." We should do as is recommended by Bacon, "consult Nature herself about Nature."

The facts which people collect for themselves from their surroundings are the best known and are longest remembered; those that are taken from books come at second hand and are easily forgotten. It is therefore exceedingly desirable that the senses of the young should be not only thoroughly cultured but kept at play. Miss Youmans very well remarks, "The existing systems of instruction are deficient by making no adequate provision for cultivating the growth of ideas by the exercise of the observing powers of children. Observation, the capacity for recognizing distinctions and of being mentally alive to the objects and actions around us is only to be acquired by practice and therefore requires to become a regular and habitual mental exercise and to have a fundamental place in education."

It is by means of the eye that a vast amount of our knowledge is acquired. The color, form and size of objects are largely learned through it. In *The Spectator* it is said, "Our sight is the most perfect and most delightful of our senses. It fills the mind with the largest variety of objects, converses with its objects at the greatest distance and continues the longest in action without being tired, or satiated with its proper enjoyments."

The system of object-teaching which has been practiced more or less of late is a wise plan of instruction. Instead of reading a description of how a thing appears to another it is much better to see it with one's own eyes.

As already hinted far too little pains are taken to teach children to use their eyes. Habits of sight-observation should be early and persistently inculcated. The exercise of this sense renders it wonderfully active and acute. Some see far more and far better than others.

Through the sense of hearing a large amount of more or less original knowledge can be gained. Articulate and all other sounds furnish ideas to the mind.

The ear should be trained to hear just as the eye to see; both because it is rendered more observing and acute and because it serves to augment one's pleasures.

The observations of taste are apt to be limited in quantity, but they are in a measure both useful and pleasurable. They are valuable on account of affording a safeguard against the consumption of injurious articles of diet. But unfortunately the taste is very liable to be seriously perverted. Nor are people inclined to indulge in only what is pleasing to the palate; they teach themselves to like through habit what is at first repelled with disgust.

Observations made through the organ of smell may be both useful and pleasurable. Nature intended the nose to serve as a life-preserver, as a guard to prevent us from breathing air and from eating food which would prove harmful. As a rule, disagreeable smells bespeak danger.

Touch-observations, like those of any of the other senses may be increased in number and accuracy to an almost incredible degree.

Of the touch St. Pierre remarks "It is the most obtuse of all our senses and nevertheless it is in some sort the seal of our intelligence. To no purpose is an object exposed to the examination of the eye in every possible position; we cannot be persuaded that we know it unless we are permitted to put it to the touch." This strange propensity has doubtless been often observed by every one.

READING.

A taste for wholesome reading is uncommon among children, and, indeed, people in general. A very large proportion of the printed matter in demand by the public simply minis-

ters to unhealthy cravings. Were Sancho Panza alive to-day he could not truthfully say, "There is no book so bad that there is no good in it." But it is useless to dwell on this phase of my subject.

By means of books one can become familiar with the observations and thoughts of others, whether of the past or the present, in all parts of the world. Through them I can learn whatever I may desire to know. Hence the value of them cannot be over-estimated. But obviously it is unwise to turn to them for knowledge which might be readily gained by one's own personal observation. Children are often made to do this in the course of their education. In regard to this the following statement of Spencer is deserving of attention: "Only when his acquaintance with the objects and processes of the household, the street and the fields is becoming tolerably exhaustive, only then should a child be introduced to the new sources of information which books supply."

Now, it is a mistake to suppose that the more one reads the more one knows. If the human mind were retentive to a boundless degree it would be possible to read very much to advantage; but this is not the case; it is not hard to over-tax it; and, moreover, forcing a flood of borrowed ideas on it soon enfeebles it. Speaking on this subject an old divine (Fuller) quaintly says, "Overburden not thy memory to make so faithful a servant a slave! Remember Atlas was weary. Have as much reason as a camel, to rise when thou hast thy full load. Memory, like a purse, if it be overfull that it cannot shut, all will drop out of it." With still greater force Dr. Rush observes, "There is a species of intemperance in reading as well as in eating. Its effects are the same upon the mind as great variety and excess in the use of aliments are upon the body. It bloats the mind and renders it weak and sickly. It moreover tends to destroy its active powers." I cannot but believe that the minds of many are ruined through this form

of intemperance. No more should be read than can be thoroughly appropriated. This piece of advice cannot be too strongly emphasized.

Parents err when they spur their children into excessive application to books ; for it will not only result in injury to their health but will stunt their observational and other powers. And as I need scarcely remark it is wrong to urge those who are already very diligent in the acquisition of knowledge to make greater efforts. In some cases it is well to restrain the ardor for study and inspire a liking for recreation, physical and mental. For it is possible to be greatly fascinated by learning at an early age. The story of Lady Jane Grey told by Roger Ascham may be cited by way of proof of this. On visiting his pupil one day he found her "readinge Phædon Platonis in Greeke" while her parents and friends were out amusing themselves. "I asked her" says he "whie she wold leese soch pastime in the Parke? Smiling she answered me: 'I wisse all their sporte in the Parke is but a shadoe to that pleasure that I find in Plato. Alas good folke they never felt what trewe pleasure ment.'"

To derive much permanent advantage from reading it is necessary to read with a purpose. If one takes up a book in order to obtain desired information the attention is kept active during the perusal of it. To let the eye run over the contents of a work without the exercise of thought will add almost nothing to one's knowledge. As is said in "Proverbs," "with all thy getting get understanding."

Children should be taught never to pass over any words they may meet with in the course of their reading which are not understood. If nobody is at hand to give assistance let a dictionary be consulted. Besides, a desire to know something of the lives of all whose names are frequently met with should be stimulated. An encyclopædia, or a special dictionary of biography may be turned to for this information. And

here I may say that the minds of the young should be disabused of the idea that it is humiliating to confess ignorance of any subject. Franklin well observes, "I find a frank acknowledgment of one's ignorance is not only the easiest way to get rid of a difficulty but the likeliest way to obtain information."

In respect to what books, apart from educational textbooks, should be read by the young it is difficult to give advice. Emerson gives three rules on the subject which are as follows: "Never read any book that is not a year old. Never read any but famed books. Never read any but what you like; or in Shakspeare's phrase—

' No profit goes where is no pleasure ta'en ;
In brief, sir, study what you most affect.' "

All these rules are in principle excellent. On each of them I will make a few remarks.

The reason why it is not judicious to read very recent books is because it is hard to select from them those that are worth reading. Productions of value are proven so by the test of time. Not one of a thousand survive in popular favor for more than a few months. Of course, it is not the fact of being old which makes books worthy of perusal.

The famed books are as a rule the best. They are the ones from which the others are largely drawn. Having read the Bible and the works of Homer, Plato, Plutarch, Shakspeare and other truly great authors one knows the gist of what is to be found in the rest. This statement holds good in regard to those on all departments of learning and knowledge.

In following the taste in the selection of reading matter there is danger, unless it is good. It is because they read what they like that many never read any but trashy books. The appetite for works of an instructive character has to be cultivated. The more one knows of a subject the more interesting it becomes; or as the German proverb runs, every

beginning is difficult ("aller Anfang ist schwer"). It is the duty of parents to direct the attention of their children to such reading as will be most profitable as well as interesting to them. In doing this they will have to consider the capacity and requirements of each. The interesting rather than the useful is craved most by the very young; and it is proper to gratify them very fully.

NOVEL-READING is sternly forbidden by some moralists; but I believe their unqualified opposition to it is irrational. A sensible piece of fiction, a truthful delineation of the better feelings, sentiments and actions of one's fellow-men may be read advantageously by any one. Such a book as "The Vicar of Wakefield" is beneficial in its influence. But the greater portion of fictitious literature is mere trash, the perusal of which is harmful. The minds of multitudes of children are polluted by exciting stories and romances based on vileness of some sort. And here I may remark that nearly all the periodicals published specially for the young are productive of evil. They are prepared to suit the prevailing tastes regardless of their character.

THE POSTURE IN READING is a subject about which a few words may fitly be said. Many habitually sit in a bent, constrained position. Now, this should not be the case. The mind cannot be clear unless the breathing is perfect; and this cannot be expected if the body is not kept straight and unrestrained. As Armstrong says—

"To stand and sit by turns
As Nature prompts is best. But o'er your leaves
To lean forever cramps the vital parts
And robs the fine machinery of its play."

The recumbent posture should be avoided, as it is apt to be very trying to the eyes. One should sit erect and keep the page of the book in the line of vision and at almost right angles to it.

REASONING.

By reasoning is meant the act of contrasting and combining and of explaining facts. This operation may involve most of the faculties of the mind; it may call at least for the exercise of the sense of difference, the sense of similarity and the memory. Through it the ideas are systematized, the knowledge is organized, or in other words, the natural unity or dependence of things is discovered. There can be neither coherency nor order in the thoughts unless reason has been at work. By the use of this, the most exalted of our powers we are led to and can not only trace causes but form conclusions or judgments. It is the active guiding principle of conduct. Hence reasoning should occupy a prominent place in a correct system of mental culture.

The great aim of reason is, or should be the discovery of truth, a thing which Cowper beautifully characterizes as "the only lasting treasure." When it labors for any other purpose its efforts are misapplied. Facts, correct explanations and just inferences are what it should seek; and to these we should be unqualifiedly attached.

Without ideas one cannot reason; in a vacant mind the process of reasoning cannot go on. It is necessary, then, to gather knowledge, or this power cannot act. In doing this very thing it may have a share; not an observation can be made which does not involve a recognition of either unlikeness or likeness, of relations. But it is with the higher relations and the causes of things that it deals principally.

There are two great methods of reasoning, THE DEDUCTIVE and THE INDUCTIVE. The former begins with generalities and descends to particulars; while the latter begins with particulars and ascends to generalities. Bacon, in his great work, "*Novum Organum*," writes, "There are and can exist but two ways of investigating and discovering truth. The one hurries on rapidly from the senses and particulars to the most

general axioms; and from them as principles and their supposed indisputable truth derives and discovers the intermediate axioms. * * * The other constructs its axioms from the senses and particulars by ascending continually and gradually till it finally arrives at the most general axioms." Until this philosopher expounded the inductive method of inquiry, little progress was made in the study of Nature. The abstract sciences or those not dependent on observation, such as geometry, are products of deductive reasoning and were early brought to a high state of perfection.

In reasoning, both the deductive and the inductive methods are useful; but the latter should be employed whenever possible. Were our knowledge perfect, perhaps, the deductive method would be always the preferable one.

I will now speak briefly of some of the ways by which the reasoning powers may be improved.

As already remarked, through observation the simpler efforts of reason are made. In this way the sense of difference and the sense of similarity and also to some extent the memory are strengthened and disciplined. This is the basis of the art of reasoning laid in childhood.

The study of the natural sciences is, perhaps, the very best means which can be resorted to for the culture of the reasoning faculties. It calls into play all the mental powers. The chief features of it are the observation and classification of facts. As Mr. Phelps, a popular English writer, remarks, "the higher branches of method cannot be taught at first but you may begin by teaching orderliness of mind. Collecting, classifying, contrasting and weighing facts are some of the processes by which method is taught. * * * Scientific method may be acquired without many sciences being learned, but one or two great branches of science must be accurately known." One who has not studied any natural science is apt to know little of the inductive method of investigation.

The study of mathematics affords discipline to the reason. It is chiefly for this end that it is so much pursued in the schools. It is for the most part deductive in method.

The study of logic or the methods of reasoning, the deductive and the inductive, is doubtless beneficial to the reasoning powers. It is possible, however, to be able to reason without having any knowledge of the rules laid down by logicians, just as it is possible to speak correctly without having a knowledge of the rules laid down by grammarians. And indeed it is better to learn both the art of reasoning and the art of speaking largely by practice. At any rate, one should have plenty to think about and be able to think well before undertaking to learn the rules by which he does so.

The art of reasoning is of gradual development. As stated above, in its simpler forms it is begun as soon as the child begins to observe and to classify his ideas. At an early age a desire to know the why and wherefore of actions and things generally arises and it should be fostered. I cannot believe that it is right to force the young to submit in ignorance of reasons to all sorts of orders. Such a plan of training is unnatural. Locke justly observes, "If I misobserve not they [children] love to be treated as rational creatures sooner than is imagined. It is a pride which should be cherished in them and as much as can be made the greatest instrument to turn them by." A child that is not taught to think for himself will find in time that rules and habits are not sufficient for his guidance. Let him, then, be taught to reason, to know the why and wherefore of matters. But, of course, a spirit of contradiction and wrangling should not be tolerated, much less encouraged. It is not akin to just reasoning.

It has been said that few human beings are so contentedly superficial as to feed habitually on unexplained facts; that on the contrary, as we find every day, the ready assumption of any cause for a fact rather than remain contented with none affords

ample proof that the search for causes is characteristic of every normal human intellect. The majority of people, however, reason very little; and many of those who do indulge in it betimes lapse into fallacies. And indeed it is easy to reason incorrectly. A mistake which is often made is to take mere coincidences or accidental sequences for causes and effects. Thus to the medicine which is given to a patient affected with a disease which would likely pass away of itself is not infrequently accorded the entire credit of cure. Again, if I undertake to explain the growth of the nation and think as does the average politician I would refer it almost exclusively to the form of government and overlook the natural advantages and other circumstances to which really it is mainly due. And again, if on wishing that I shall see a friend to-day he should unexpectedly come into my office after awhile, it would not be difficult to fall into the error of attributing his coming to my wish.

IMAGINATION OR FANCY.

The imagination is simply the power by which mind-pictures, so to speak, are formed from ideas gathered mainly from memory. It is to some extent constructive; it may invent or originate new phases of thought. Mr. Darwin says of it that it "is one of the highest prerogatives of man. By this faculty he unites independently of the will former images and ideas and thus creates brilliant and novel results." Fancy may be taken as of similar meaning. Some, however, give this name to the faculty when in its exercise matters very unreal and extravagant are dealt with. Thus a mental picture of a body of men engaged in a military drill is produced by the imagination; while one of a body of fairies indulging in military evolutions is produced by the fancy.

The imagination is not as active in many as it might well be. Says Emerson, "men are ever lapsing into a beggarly habit wherein anything that is not ciphering, that is, which

does not serve the tyrannical animal is hustled out of sight. Our orators and writers are of the same poverty and in this rag-fair neither the imagination, the great awakening power, nor the morals, creative of genius and of men, are addressed. But though orator and poet be of this hungry train the capacities remain. We must have symbols. The child asks for a story and is thankful for the poorest."

The notion that imagination deals little with real things is erroneous. Nor is it of use only to poets, painters and the like; it may be of great practical value to every one. Through it we can in a manner enjoy anew the pleasures of the past and anticipate those of the future. Without it delight could only arise from absolute impressions on the senses. If it were not for it few could have the courage necessary to undertake labors which bring no immediate gratification. Moreover, in absence of it we should be blind to the mental state of others, and consequently could have very little of that sympathy for one another upon which the observance of the Golden Rule almost wholly depends.

Not only is the degree of development of the imagination very different in different persons but the character of imaginings may vary greatly. One can dwell on unpleasant as well as pleasant things; and indeed there are many who are almost constantly in a state of misery from painful contemplations. Hence the cultivation and guidance of the imagination are both affairs of great moment.

As with mental faculties in general the imaginative powers are strengthened by use and are weakened by disuse. In culturing them, then, if inclined to be excessively active they should be kept as still as possible, and if inclined to be undesirably inactive they should be stimulated freely.

I will now say a few words about the means by which the imaginative powers may be exercised.

The contemplation of natural things affords the very best

stimulus to the imagination. A landscape with its many objects, inanimate and animate, cannot but arouse numerous trains of ideas. Every little plant, nay, every stone may furnish a text for lengthy musings of a wholesome character. Every one is surrounded by myriads of springs of refreshing thoughts but only a few are wont to draw liberally from them.

Paintings, statuary and other works of art which are appreciable through the eye are all stimulating to the imagination. A very simple picture may be rich in suggestions which may be dwelt on profitably.

Music ministers lavishly to the imagination. An air may be sufficient to fill one with sentiments. Hearing a strain which was familiar in other days may flood the mind with memories.

Poetry being a product of glowing feelings and exuberant sentiments is promotive of the action of the imagination. A taste for this species of literature should be formed in early life.

Novels, stories and tales are in general more or less works of imagination. Reading them serves to carry one's thoughts away from the stern realities of life. It is easy, however, to indulge in it to excess.

In cultivating the imagination care should be exercised not to distort it. The minds of children are often injured by the impressions made by narrations of horrors and of horrible things. Whatever is calculated to produce disagreeable thoughts should not be brought to the attention of any, but especially of the very young. In *The Spectator* there are some sensible remarks on this subject. "Were I a father," says the writer, "I would take particular care to preserve my children from those little horrors of the imagination which they are apt to contract when they are young and are not able to shake off when they are in years. I have known a soldier

who has entered a breach affrighted at his own shadow and look pale at a little scratching at his door, who the day before had marched up against a battery of cannon. There are instances of persons who have been terrified even to distraction at the figure of a tree, or the shaking of a bulrush. The truth of it is I look upon a sound imagination as the greatest blessing of life next to a clear judgment and a good conscience."

Besides a due appreciation of the imagination a knowledge of the nature of it is valuable in teaching. Particularly should it be known that facts incline to recur to mind in the order in which they were acquired. Thus the letters of the alphabet when learned in order from A up to Z cannot be readily repeated backward. By association the next one is suggested by the one which immediately precedes it.

CHAPTER IV.

THE CULTURE OF THE WILL.

*Preliminary Remarks—Obedience—Rewards and Punishments
—Good and Bad Habits—Decision of Character.*

PRELIMINARY REMARKS.

Will or volition becomes manifest in action, in the conduct. This power of the mind is, therefore, executive in function. Through it the intentions are carried out. Every one possesses it, but in some it is far more marked than in others. Persons who are void, or almost void of it are accounted imbeciles.

Voluntary actions take their rise in feelings and are guided by the reason. Now there is a pronounced tendency to make for whatever is pleasurable and to shrink from whatever is painful. This great principle of self-conservation is both natural and beneficent. As stated by Spencer in his work, "The Data of Ethics," "there are connections between pleasure in general and physiological exaltation and between pain and physiological depression. Every pleasure increases vitality; every pain decreases vitality. Every pleasure raises the tide of life; every pain lowers the tide of life." Of this doctrine it is well to say that it does not give any countenance to excessive indulgence of any kind. The enlightened will shuns all forms and degrees of gratification which may induce pain sooner or later. And as said by Plato, "the salvation of human life has been found to consist in the right choice of pleasures and of pains."

The guiding principle of conduct should be a fervent love of goodness. But when interests of importance to others as well as one's self are involved it is hard to decide to what

extent the good of either should be considered. It is certainly wrong to do anything for one's own good at the expense of an injustice to any one. However, one is doubtless justified in acting as he pleases so long as he does not inflict any injury on others. Under certain circumstances it is a duty to place the good of others above that of one's self. Thus, a mother who will not practice self-denial and undergo hardships in order to promote the welfare of her child is by no means a model parent. But there is a sense of satisfaction, a glow of feeling derivable from ministering to the good of others which is an ample recompense for the practice of considerable self-sacrifice.

The power of will is of gradual growth. In some children it gathers force much faster than in others. The culture of it should be begun in early infancy.

Extension of the scope of self-command or voluntary power should be one of the principal aims in view during the whole period of training of the young. A child should be taught to do willingly and bravely whatever his conscience leads him to know ought to be done. The future of those who grow up without acquiring this faculty will assuredly indicate that it is well to teach it in early life. For every one must become in time, for the most part, his own guide. And indeed the characters of all are largely of their own making. Shakespeare furnishes some good ideas on this point. "'Tis in ourselves," says he, "that we are thus, or thus. Our bodies are our own gardens; to the which our wills are gardeners; so that if we will plant nettles, or sow lettuce; set hyssop and weed up thyme; supply it with one gender of herbs, or distract it with many; either to have it sterile with idleness or manned with industry; why the power and corrigible authority of this lies in our wills."

By practice many things may be done without thought or automatically. Through repeatedly acting in a certain way

the faculties afterward incline to act similarly without the guidance of reason. Hence it is important that correct habits should be cultivated in youth. This matter will be dwelt on later.

Some actions, especially in the very young are the result of neither will nor habit; they spring simply from an exuberance of nervous energy, an effervescence of spirit. Not a few of the acts of healthy, playful children are thus explained. Actions of this class should be regarded with some degree of leniency, however evil they may be.

I am not one of those who believe that children are totally depraved; nor on the contrary do I hold that they are, as a rule, faultless. Most of them, like Mother Goose's son Jack, are "not very good nor yet very bad." Their intentional and other acts of evil are very largely referable to defective training. Every child is liable to become mischievous and will, if care be not exercised. Cowper writes—

"The spring time of our years
Is soon dishonor'd and defil'd in most
By budding ills, that ask a prudent hand
To check them."

It is very easy to be too strict with children. Some parents are greatly prone to be constantly seeking for faults in them. This is all wrong. Acting in such a way toward a child tends to make him bad; for it lowers his self-respect. One that is habitually treated thus is apt to become dispirited and form a dislike to his home and all about it.

In Longfellow's poem, "The Ladder of St. Augustine," occur the following lines which deserve to be indelibly impressed on the mind of every young person:—

"The low desire, the base design,
That makes another's virtues less;
The revel of the ruddy wine,
And all occasions of excess;

“ The longing for ignoble things ;
The strife for triumph more than truth ;
The hardening of the heart that brings
Irreverence for the dreams of youth ;

“ All thoughts of ill, all evil deeds
That have their root in thoughts of ill ;
Whatever hinders, or impedes
The action of the nobler will ;—

“ All these must first be trampled down
Beneath our feet, if we would gain
In the bright fields of fair renown
The right of eminent domain.”

OBEDIENCE.

In the eyes of the common law, which is the expression of the experience of the past as to what is proper, all persons under twenty-one years of age are infants; and their parents, or guardians are largely responsible for their conduct. Were it not to the advantage of minors to be held in this position it is extremely likely that the laws in regard to it would soon be changed. Apart from other considerations, then, it is but right that a reasonable measure of obedience should be exacted.

It is in early childhood that the will is most pliable; and hence it is then that the greatest efforts should be made to properly shape the conduct of children. This is the right time in which to form the habit of obedience, than which there is no duty more deserving of attention. Fuller suggestively remarks, “ Let the child’s first lesson be obedience and the second may be what thou wilt.”

All parents would do well to bear the following truth in mind: love and not fear should be the leading power at play to shape the conduct of the young. The obedience which springs from dread is not deserving of admiration and it affords but little, if any discipline to the will.

Firmness is a requisite feature of parental rule. Whatever orders are given should always be enforced, so that no hope of evading them can ever be entertained. Hesitation begets the idea that there is room for evasion. Children who have found by experience that they can obtain whatever they want, or do as they please, will never fail to make strenuous efforts to have their way. Not a few are in the habit of resorting to crying to force compliance with their wishes; and knowing that it will be successful they practice it repeatedly. In regard to this Dr. Chavasse says, "Many a child has only to cry to gain his point, to obtain what he desires. And does he not cry with a vengeance? He bellows again and again until he gains the victory which he knows by experience he eventually shall do if he will but persevere, and if he will but make noise enough. Parental weakness of this kind is most reprehensible. Such mothers are preparing rods not only for their own backs but for the backs of their unfortunate and deeply-to be pitied children!"

Consistency is another requisite feature of parental rule. What is viewed with favor to-day should be viewed with favor to-morrow and what is disapproved of to-day should be disapproved of to-morrow.

In training the young it is very unwise to be constantly forbidding. It is natural for people of every age to be restless under restraint, to be made somewhat headstrong by opposition, especially if it be unreasonable. Parents who are everlastingly using such phrases as "you mustn't do that," and "you mustn't go there," will assuredly be much troubled with their children. Miss Martineau properly remarks, "Nature points out that the true method is to control the will not by another person's will but by the other faculties of the child itself. When the child wills what is right and innocent let the faculties work freely. When it wills what is wrong and hurtful appeal to other faculties and let this one sleep; excite

the child's attention ; engage its memory, or its hope, or its affections. If the infant is bent on having something that it ought not put the forbidden object out of sight and amuse the child with something else." It should be generally known that opposition is really the best means by which to strengthen most evil propensities. Any one may illustrate the truth of this statement by trying to make a child relinquish the use of improper words and phrases.

Coaxing children to obey is a serious mistake. If the demand is reasonable let compliance with it be exacted as a matter of duty and not as a favor. It would be greatly wise for many to revolve this statement occasionally in their minds.

Parents who bring up their children in such a way as to favor waywardness may not live long before seeing the folly of their course. Let a child habitually disobey his parents for a while and he will inevitably become disregarding of everything which stands in the way of the satisfaction of his unbridled desires. Pander to the wishes of the young and as surely as days grow into months and months into years their power of both self-denial and self-restraint will wane and leave them at the mercy of their own perverted longings. This would be an excellent plan to pursue if one's purpose were to produce criminals, to fill penitentiaries, to furnish subjects for the gallows. I speak advisedly. Cases illustrative of what I have said are familiar doubtless to most of my readers. I may cite one. Among the sixteen hundred languishing inmates of the cells of a massive and dreary-looking penal institution which is within a stone's throw almost of where I am sitting there is an only son. A dozen years ago he was a playful, innocent little boy, and the pride of his fond, reputable mother. As he grew up he was allowed, nay encouraged to do what seemed right in his eyes. He went to school just when he pleased and he did nothing that was not pleasing to him. Soon he became the companion of boys not

less wayward than himself, and soon he was in the hands of the police authorities. Although he is not of age yet I believe he has been convicted half a dozen times of criminal offences. Every time he gets caught erring his mother comes to his rescue and defends him to the full extent of her ability. Now, which is the more to blame, he or his indulgent parent?

REWARDS AND PUNISHMENTS.

The nature of children is such that it is easier and better to lead than to drive them ; from which it follows that in managing them rewards deserve more attention than punishments. Besides, the motives call for stricter consideration than the actions. If a child means to do right and does wrong, or in other words does not mean to do wrong it is unwise to punish him for his conduct. Accidents and the like should, therefore, be viewed with leniency, or, perhaps, be overlooked.

Encouragement is relished by both old and young. It tends to arouse their energies, to inspire them to exert themselves to do what is desired of them. In respect to this it is said by St. Pierre, in his remarks on education, "If you wish children to learn quickly to read, put a sugar-plumb over each of their letters, and they will soon have their alphabet by heart, and if you multiply, or diminish the number they will soon have become arithmeticians."

It is wrong to couple every action requested with a reward; for it will not always be possible to thus stimulate activity. A child who is habitually induced to do anything by the expectation of a reward will almost certainly refuse to act in the future, if a reward is not offered. Therefore, it is well to always encourage him to regard a sense of duty, a love of right as the main incentive to good conduct.

Praise is one of the best of rewards. "I assure you," says Roger Ascham, "there is no such whetstone to sharpen a good witte and encourage a will to learninge as is praise." And it

is just as promotive of anything else as learning. But flattery should be shunned; for it is productive of vanity chiefly. A sensible person of any age is not likely to be greatly pleased by it.

Taking an interest in the actions of the young is to them somewhat in the nature of a reward. A child whose doings are noticed is inclined to exert himself to make them worthy of commendation. N. P. Willis finely pictures a mother as asking her "restless one" how the day had been spent and on receiving the reply, "Playing," she continues—

"But what hast thou done beside
To tell thy mother at eventide?
What promise of morn is left unbroken,
What kind word to thy playmate spoken,
Whom hast thou pitied and whom forgiven,
How with thy faults hast duty striven?
What hast thou learn'd by field and hill,
By greenwood path and singing rill?"

It was a kiss from his mother that inspired the celebrated Benjamin West to labor to be an artist. This she gave him as an expression of her appreciation of a rough sketch of his infant-sister's face, made by him in boyhood. Said he afterward, "That kiss made me a painter."

It may not be amiss to say that any reward which is promised should invariably be given; and, of course, none should be promised which cannot be given. A child should never be deceived. According to an old adage a cunning trick helps but once and hinders ever afterward.

Turning now to the subject of punishments I may begin with a statement very similar to the one just made in respect to rewards and it is that if a penalty is attached to a particular offence let it be inflicted, if the offence is committed. Nor should there be any delay about doing so. It is demoralizing to a child, or, indeed, any one, to entertain the idea that there is only a slight chance of being punished for his acts of evil.

On the other hand a knowledge that there is a definite penalty for every voluntary misdemeanor and that it will surely and promptly be enforced tends to prevent wrong-doing.

A scolding is, perhaps, the punishment to which children are most frequently subjected. It is, however, a penalty which is seldom productive of good. Those on whom it is inflicted often are not likely to have great self-respect. Nor will they be very regardful of what is said to them; for their sense of shame is blunted by it. From bitter words great harm may result; they may rankle in the mind and inspire evil behavior. Then, as said by Shakspeare—

“One doth not know

How much an ill word may empoison liking.”

Wise parents do not speak harshly, or apply bad epithets to their children.

The deprivation of some pleasure is a good form of punishment for ordinary errors of conduct, because it both causes pain and strengthens the power of self-denial. This kind of penalty as well as all others should, of course, be varied in severity according to the grade of the offence for which it is administered. The sense of injustice is not wanting in even very young children; and consequently the impression made on them by the infliction of a similar degree of punishment for misdemeanors of different degrees of gravity is bad. If a boy be confined in a room alone and deprived entirely of food during half a dozen hours for deliberately persisting in wrong-doing it is unreasonable to subject him to like treatment for the commission of a simple breach of propriety. This matter, I am afraid, does not receive as much attention as it should.

That it is wise under certain circumstances for parents to punish their children with the rod admits of no doubt. The ancient precept, spare the rod and spoil the child is not less applicable to-day than at any other period in the history of

the world. But the frequent use of it is more harmful than beneficial ; it at least generates indifference to the dictates of the sense of right and wrong. Moreover, one that is treated like an irrational animal for trivial offences is very certain to lose not only self-respect but respect for his tormentors. It may be taken for granted that persons who cannot manage their offspring without indulging repeatedly in cruelty are unfit to have charge of them. If a proper system of training is enforced, corporal punishment need not be required at all. When it is resorted to it should be for a well-defined reason, for a serious voluntary misdemeanor. And let this be remembered : when a child is lashed it is a piece of unmitigated folly to at once take measures to allay the smart attendant on it. Some mothers that I am acquainted with no sooner use the rod than they begin to regret it and act as if they had committed a serious wrong.

Of course, no parents, except those that are void of common sense and of love for their children inflict corporal punishment on them with a bludgeon, or any instrument which may give rise to any permanent injury.

As to the use of the rod in schools, I believe it is not approved of by any thoughtful person. Teachers may resort to other methods of punishment with better effects. Says Plutarch, "I am confident that no boy who will not be allured to letters without blows will ever be brought to anything with them." Every one should know that when disturbed the mind is very unreceptive of ideas. Locke well remarks, "It is impossible children should learn anything whilst their thoughts are possessed and disturbed with any passion, especially fear, which makes the strongest impression on their yet tender and weak spirits. Keep the mind in an easy, calm temper when you would have it receive your instruction, or any increase of knowledge. It is as impossible to draw fair and regular characters on a trembling mind as on a shaking paper."

GOOD AND BAD HABITS.

The force of habit is very great. After acting repeatedly in a certain way, one finds it difficult to act otherwise. This fact may be regarded as one of cardinal importance in moral training. A child that is led to do right to-day will tend to do so to-morrow without any rule, or command, without thought. Shakspeare makes Hamlet say to one of evil ways:

"Refrain to-night
And that shall lend a kind of easiness
To the next abstinence; the next more easy,
For use can almost change the stamp of nature."

One that does right habitually has no desire to do wrong; and the reverse is almost as true. This being so it surely behooves parents to keep their children from becoming familiar with evil and to prevent them from doing even once anything which they should not do again and again. Early biases cannot be removed easily. Those who have been accustomed from infancy to act in a certain way can scarcely be made to act differently. Or as Cowper says—

"Our most important are our earliest years;
The mind impressible and soft with ease
Imbibes and copies what she hears and sees,
And through life's labyrinth holds fast the clue
That education gives her, false or true."

Evidently, then, it is wise in training the young to look well to beginnings. It is the first step from the proper path-way which is the gravest. A trifling sin is sufficient to switch one into a career of criminality. On the other hand a very insignificant act of the right kind may divert one into a life of usefulness and glory. Johnson tells us that it was the reading of a copy of Spencer's "Fairy Queen" which happened to be in his mother's room which inspired Cowley as a poet and he ventures to declare that "the true genius is a mind of large general powers accidentally determined to some

particular direction." Looking at an apple fall diverted Newton to the study of the laws of gravitation ; the incidental observation of the swinging of a lamp in a church set Galileo at the study of physics ; and to viewing a certain line of horizon in childhood Ruskin attributes the development of his love for natural beauty.

In this connection I may remark that it cannot be too explicitly and forcibly stated that it is all-important that the tastes of children should be properly shaped ; for on these depends assuredly to a great extent their whole future course. If there is not an inward fondness, a love developed for a pursuit it is impossible to expect that it will be prosecuted earnestly and successfully. This is very evident in the matter of learning. A person without a taste for knowledge cannot become a great scholar. As Plato observes, "though a child have all the gifts of Nature at wish and perfection of memory at will, yet if he have not a special love of learning he will never attain much learning." No one will pursue knowledge voluntarily and ardently, who has not a thirst for it. This is a truth which should never be forgotten by educators. If the education which one receives does not inspire a lasting desire for self-improvement it fails to subserve its chiefest end. For let it be understood that however well the mind may be cultivated and however great the amount of knowledge acquired in childhood and youth may be there will be room to improve one's self throughout life. Mental culture is only begun in the schools and can never be completed. The wisest and best may grow wiser and better.

I will not attempt to enumerate the habits which are good and those which are bad. I may say a few words, however, about several.

There should be ORDER in one's method of living and acting. An irregular mode of life is always a bad one. It is impossible to be either healthy or happy if the time is not

disposed of systematically. Nor need a person who lets his days and nights pass as they may expect that years will cover him with honors. One must work not only perseveringly but in accordance with a plan who hopes to accomplish much. Thus it is that people can perform great labors and yet feel that they have not been very busy. Dr. Gross, the most illustrious of American surgeons, says, "To the question so often asked me, how I have been able to write so much, my answer invariably has been because I have labored systematically while other men were asleep, smoking their cigar, lounging about the house, or spending the evenings in amusement. A vast amount of this work has been done in my carriage in the daily rounds among my patients, not in active writing but in arranging and digesting my material, which after reaching my office I seized the earliest moment to commit to paper. In this manner a man may perform a large amount of literary labor in the twenty-four hours. The brain of a busy man is never idle. I have worked out many a sentence in my sleep."

PUNCTUALITY is a very desirable habit, and it should be taught early. One's promises should be scrupulously regarded. People soon lose confidence in those who do not abide strictly by their engagements. This has been the cause of the misfortunes of thousands. What I say I will do that I shall do should be a motto of all. To be sure it may be a physical impossibility to keep an appointment; but this is not likely to be often the case.

INDUSTRY is largely a habit, and it is one which should be assiduously cultivated from early childhood forward. I have elsewhere spoken of it but it is impossible to say too much about it. Want of it is the prime reason why multitudes are unsuccessful in life and the cause of the unhappiness of countless thousands. Doing nothing is a pestilential blight; a worse curse cannot fall to the lot of any one. People must

work if they wish to be of any account in the world and to shun wretchedness. Without diligent application, "without sweat, or endeavor" the finest talents can be of but little value. And once the taste for being busy is well formed idleness will prove irksome. Parents should lay these remarks to heart and act accordingly. They should not only infuse their children with the spirit of industry but engage them early in suitable employments. The following remarks, the substance of an article in a magazine of the day, are to the point: a copy of a circular sent to each of a hundred of the leading men of Springfield, Massachusetts, inquiring as to where and how their youth was passed, elicited eighty-six answers. Of these, sixty-four were brought up on farms, twelve in villages and twelve in cities. Six of those brought up in villages and cities were accustomed to do farm-work and were practically farm-boys and only five reported that they had no work in particular in early youth. In other words eighty-three of the eighty-six substantial men were workers in boyhood. If a like inquiry were instituted in Philadelphia, or any other large city it would, doubtless, be very similar in its results.

* It may not be amiss to observe that there are people in the world who think that one who earns his daily bread is not as deserving of respect as one who does not. Verily, such are far from being themselves the most worthy of it. Did not some one toil to produce the food they eat? Did not the sweat roll from some brow to provide for them each of the comforts in which they revel ungratefully? It is certainly far more creditable to be self-supporting than not. An excellent religious vow is the following: "To learn and labor truly to get mine own living."

The habit of USING TOBACCO calls for a few words. Of it I do not hesitate to say that it is one of the very worst which a boy can be allowed to form. It is filthy, debilitating, and

altogether an abomination. That it is injurious to health is a fact which there is no reason to doubt. Dr. B. W. Richardson remarks, "It induces various nervous changes some of which pass into organic modifications of function. So long as the practice of smoking is continued the smoker is temporarily out of health. When the odor of tobacco hangs long on the breath and different secretions of the smoker that smoker is in danger. Excessive smoking has proved directly fatal." Being a deliberately cultivated habit there is never any excuse for it. It is related of Franklin that toward the close of his life he said to a friend that he had never used tobacco in any way and that he believed there was not much advantage to be derived from it, for he had never met with a man who used it who advised him to follow his example.

DECISION OF CHARACTER.

Decision of character or power to form definite ideas in reference to any matter and when formed to stand by them firmly, is an important trait of mind. It exists in all possible degrees of completeness; and it is usually held to be more marked in males than females.

Those in whom this faculty is poorly developed are very likely to be pressed to the wall in the battle of life. As Foster says in his essay on the subject, "weakness in every form tempts arrogance and a man may be allowed to wish for a kind of character with which stupidity and impertinence may not make so free. When a firm decisive spirit is recognized it is curious to see how the space clears around a man and leaves him room and freedom."

The basal elements of decision of character are confidence in one's own judgment and energetic feelings or courage. Now, to have full confidence in one's own judgments it is necessary to be well informed and to be able to reason correctly. When the mind wavers it is because the opinions are

uncertain. Then, to be able to maintain or apply the opinions it is necessary to have courage or energy of feeling. Some, however, are so constituted that even without being intelligent and able to reason logically and definitely they are always self-reliant and decided in their conduct. To them it matters little whether or not their views are right. This is a dangerous class. To it belong the despots, bigots and evil-doers generally. Unless one is guided by sound moral principles headstrongness is harmful both to self and others.

A shilly-shally cast of mind is very common. There are really comparatively few who have power enough to reply to a question bearing on conduct which calls for either yes or no as an answer. This inability is not usually due to want of intelligence; it is nearly always attributable to moral cowardice.

If one knows that his ideas are right it is wise to firmly believe in them, to tenaciously hold to them. Persons who are constantly veering in their opinions, who are satisfied to shift in their views from day to day, are unworthy of confidence. But it is not easy to be sure that one's ideas are right. The most enlightened often discover reasons why they should modify their opinions; and indeed as Bacon says, "the perfectest man is the most susceptible of help, improvement, impression and alteration." In regard to ordinary matters, however, there is generally little difficulty experienced in distinguishing between right and wrong. Miss Martineau remarks, "There is no rational being who is not capable of understanding from the time he can speak what it is to wish to do good."

When one discovers that his ideas are wrong it is the part of wisdom to change them as soon as possible. And it is a duty of every one to search for light on all doubtful points before he comes to a definite conclusion in respect to them. It is amusing to see how easily some people can form opinions

on subjects which the most enlightened cannot understand. The ignorant are the people of fewest doubts and are the most positive in their convictions. Arguments make little impression on them, for they cannot see the force of them. They require to be instructed more than reasoned with. This is precisely the position which children occupy.

There is need for people of decided character. Men and women who have intelligence enough to form right opinions and courage enough to maintain them are far too few. It is easy to drift into the current of popular sentiments; and there it is that most people tend. Every wave of opinion carries the great majority captive and every fashionable whim is sufficiently powerful to turn their heads. Reason is the lamp of life, but few there be who are inclined to trim it and be guided by it. By the light of it alone can right be distinguished from wrong; and without a knowledge of what is right one is sure to stumble frequently. It is finely observed in "Proverbs," "He that walketh uprightly walketh surely."

CHAPTER V.

THE CULTURE OF THE SOCIAL SENTIMENTS.

Preliminary Remarks—The Manners—The Sexes—Poverty and Riches—Games and Amusements.

PRELIMINARY REMARKS.

Society is a complex organism and every member of it is more or less vitally connected with it. A person is necessarily brought into intimate relations with many others. One can hardly pass a day without having some intercourse with those around. But it is not alone that people must associate to some extent with one another, for having social propensities they will deliberately cultivate acquaintanceship. It is apparent, therefore, that children should not be allowed to grow up without any systematic social culture. Left to themselves, they may, to be sure, learn by experience to so mould their bearing and behavior as to redound most to the advantage of one another; but experience is a slow teacher as well as a costly one.

As hinted already man is a social creature and would associate with his fellow-men even that business and allied necessities did not lead him to do so. There is a natural love of others native to every one's heart. In some, I am aware, it is poorly developed; but it nevertheless exists to a degree. In every bosom there is some humanitarian spirit, some sympathy and regard for even the most humble, nay, even the most depraved of the species. Doubtless, self-love is stronger than it, and, as a rule, it is perfectly proper that it should be. And here I may say that these are the two great influences at play in shaping conduct. Adam Smith, the student of politi-

cal economy and related matters, whom Buckle, the historian, declares to be "by far the greatest of Scotch thinkers," was the first, perhaps, to place emphasis on this. He opens his work on moral sentiments which was given to the world in 1759 as follows: "How selfish soever man may be supposed there are evidently some principles in his nature which interest him in the fortune of others and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it. Of this kind is pity or compassion, the emotion which we feel for the misery of others when we either see it or are made to conceive of it in a very lively manner. That we often derive sorrow from the sorrow of others is a matter of fact too obvious to require any instances to prove it; for this sentiment, like all other original passions of human nature is by no means confined to the virtuous and humane, though they, perhaps, may feel it with the most exquisite sensibility. The greatest ruffian, the most hardened violator of the laws of society is not altogether without it."

Now, in the nature of things it is well to entertain good feelings for those around us and to act toward them as we would wish them to act toward us. He who has no regard for others and consequently in his treatment of them considers the well being of himself only will discover before long that his sentiments are impolitic, that he must have some consideration for others if he wishes them to have any for him. Whoever would have friends must himself be friendly. Children should be taught to realize these truths; for if they are not time will in all probability bring them rudely to their right senses. Returning them good for evil is a wretched way to prepare them for self-steering through a selfish world.

Although it is proper for children to be friendly disposed toward all around them it is hazardous to let them become intimate with everybody. Evil companions will corrupt

them no matter how good they may be. As it is said in "Proverbs," "can a man take fire in his bosom and his clothes not be burned?" Every one tends to think and act like those with whom he associates habitually. Then, let one still cultivate the society of those from whom something which is improving can be gained.

THE MANNERS.

The manners or personal bearing to, or in the presence of others is an extensive subject, one to which a whole volume might be devoted. Much indeed has been written on it. An Englishman, Lord Chesterfield, prepared a book on it and allied themes, which is very celebrated, but which is now somewhat antiquated. Either this or one of recent date may be read with profit by those who are unfamiliar with the details of the matter in question. I will append, however, a few remarks on each of several features of it.

The subject of manners is one which is far from being unworthy of much consideration; on the contrary it is highly deserving of attention, especially in early life. In his essay on it Emerson says, "Manners are the happy ways of doing things; each once a stroke of genius, or of love, now repeated and hardened into usage. * * * When we reflect on their persuasive and cheery force; how they recommend, prepare and draw people together; how in all clubs manners make the members; how manners make the fortune of the ambitious youth; that for the most part his manners marry him and for the most part he marries manners; when we think what keys they are and to what secrets; what high lessons and inspiring tokens of character they convey; and what divination is required in us for the reading of the fine telegraph we see what range the subject has and what relations to communicate power and beauty."

A sincere desire to render one's self pleasing to others is

the basis of good manners. A person possessed of this spirit will soon acquire the art of conducting himself in accordance with the rules which custom stamps as correct. If the wishes be right there is seldom much difficulty experienced in regulating the conduct. A right state of the feelings must exist or the actions will be at fault. Sentiments of good-will to others, then, should be fostered in children from as early an age as possible. And in respect to manners as to many other things the example shown them is a matter of the utmost importance; for they are imitative in the highest degree. Through association the ideas and ways are largely shaped. As showing this Locke says, "If a true estimate were made of the morality and religions of the world we should find that the far greater part of mankind received even those opinions and ceremonies they would die for rather from the fashions of their countries and the constant practice of those about them than from any conviction of their reasons."

BASHFULNESS or a feeling of restraint in the presence of others is not uncommon among the young. Mr. Darwin observes, "No one can have attended to very young children without being struck at the unabashed manner in which they fixedly stare without blinking their eyes at a new face. An old person can look in this manner only at an animal, or an inanimate object. This I believe is the result of young children not thinking in the least about themselves, and therefore not being in the least shy, though they are sometimes afraid of strangers. I saw the first symptom of shyness in my child when nearly two years and three months old."

When not marked, bashfulness is rather commendable than otherwise, particularly in girls; but when it is a very prominent trait of the character it should be regarded with disfavor. Certainly a person who has it in excess is not apt to become popular. And a rather silly element of character it is. There is seldom any reason why it should exist. It is only on meet-

ing a total stranger that it is to any extent justifiable and then only for a short time. Children thus affected should be brought frequently into the company of others. However, as already remarked, bashfulness is not a despicable quality in the young. That peculiar old philosopher, Diogenes, on seeing a young man blush said, "Take courage for that is the color of virtue."

AFFABILITY or an open, free manner is admired by most people. A child, or indeed a person of any age with this trait of character is very certain to make many friends. All young children are, or ought to be disposed to be affable; and consequently they should be taught that it is unwise to be otherwise. Teaching them to be reserved and to view every one more or less in the light of an enemy is entirely wrong. Unless there is some special offence given all are, as a rule, I believe, inclined to be friendly.

BOLDNESS or great self-assertion is not commendable in any one, but more particularly in the young. It springs mainly from the possession of an excessive degree of confidence in one's self. Seldom does much advantage accrue from it in the end; time generally proves that it is to one's interest not to be of an over-presuming disposition.

AFFECTATION or pretense in the manners merits condemnation, in spite of the fact that the object of it generally is to please. It is commonly a transparent piece of deception and tends greatly not only to bring the person's defects into notice but to make him ridiculous. An excellent precept for the young to bear in mind is this: always act naturally. At any rate as I have already hinted it is impossible to assume alien airs and manners at pleasure to any purpose, one must be transformed into the kind of person of whom these are the true expression before they will appear becoming. Nature does not look on hypocrisy with favor; while as Emerson says she "forever puts a premium on reality." And it is only

after the fountain of one's desires has been polluted that living in masquerade is at all pleasing. Children rarely incline to be affected in any way unless they are influenced by example, or instruction of an improper sort.

VANITY or the entertainment of excessively high ideas of one's worth and attractions is a palpable fault. It is a barrier in the way of self-improvement; and there are few other things which are better calculated to bring one into contempt. Children are not infrequently guilty of it; and in them it is usually encouraged, especially in the matter of personal appearance.

THE SEXES.

The existence of two kinds, a male and a female, of every one of the higher, and, indeed, of almost all species of animals is an obvious fact. I need scarcely say that this is a remarkable provision of Nature. Evidently it is for a great purpose. Each sex is the complement of the other; it requires both to constitute a complete unit. There are two sides, then, to humanity. Neither man nor woman is representative of the species; the two are needful to form an elementary part of it.

Now, there is no reason to doubt that unlike as the sexes are physically they are quite as unlike mentally. Each is endowed with peculiarities which subserve the performance of a different mission in life. Herbert Spencer well observes, "That men and women are mentally alike is as untrue as that they are alike bodily. Just as certainly as they have physical differences which are related to the respective parts they play in the maintenance of the race, so certainly have they physical differences, similarly related to their respective shares in rearing and protection of offspring. To suppose that along with the unlikeness between their parental activities there do not go unlikenesses of mental faculties is to suppose that here alone in all Nature there is no adjustment of special powers to special functions."

The statements which precede are deserving of the serious consideration of both parents and educators. It may justly be inferred from them that in the culture of boys and girls the difference in their prospective duties should not be allowed to pass out of sight. This point has been dwelt on elsewhere. But strongly as I believe that the members of either sex should not be rendered alike in tastes, ideas and aspirations, I hold that it is unwise to draw distinctions between them very early. Children should not be taught to contemplate their sexual relations; yet there is no surer way to do this than to do as many do, endeavor to make them little men and women in their appearance and behavior. It is unnecessary to deliberately cultivate sentiments pertaining to sex; they will arise only too soon of themselves. It would doubtless be to the advantage of both males and females to try to have them alike, or nearly so in dress, actions and all other respects until they are at least ten years of age. Nor is it judicious to take measures to prevent them from associating together at any period. He is a poor observer who has not noticed that the best way to strengthen one's desires for anything is to magnify the obstacles in the way of their satisfaction. The natural tendency of the young of either sex to seek each other's company cannot be blighted by opposition; and all efforts which may be made to keep them greatly apart are not in the interest of morality.

When boys and girls have become twelve, thirteen, or fourteen years of age, or in other words, have arrived at the age of puberty, parents should teach them fully the meaning and import of matters pertaining to sex. There should be no hesitancy about doing this; for it is a duty of extremely great importance. And I know of no greater sin on the part of parents than to neglect to point out to their children, at the proper time, the horrible evils which spring from indulging the passions. A little timely instruction and advice may be the means of preventing the encouragement of licentious

imaginings and also the committal of licentious acts. In respect to these matters this statement of Ascham is certainly true, "He hazardeth sore that waxeth wise by experience."

The amount of evil which arises from letting lustful desires go unbridled is appallingly great. The constitutions and minds that are shattered and the characters that are blasted by this despicable vice are incredibly numerous. I make these statements deliberately. There is a crying need for greater personal purity, for virtue.

POVERTY AND RICHES.

One does not require to be told that riches are unequally distributed among the members of a community. Some have scarcely income enough to enable them to procure the necessities of life, while others have more than they can spend however extravagant they may be. Doubtless this is to some extent well. At any rate it is certain that if an even distribution of accumulated property were made to-day, in less than a year many would have less and many more than what they started with. And as every observer knows the poor often become rich and the rich poor.

Now, every one has a liking for wealth and I do not disapprove of it. Poverty is in some respects a curse, and I believe that all should try to get rid of it as soon as possible. But one can have longings for things better than money. The gifts and graces which ennoble humanity constitute the possession which all should most fervently desire and which all should most highly prize. A person that is void of enviable bodily and mental qualities though he were rich as Cræsus is a miserable object; he is poor indeed. It is to be regretted that one's wealth should be the thing which is most likely to attract attention as well as to be the chief basis of the admiration of people in general. Referring to this Dr. Johnson says, "As many more can discover that a man is richer than that

he is wiser than themselves superiority of understanding is not so readily acknowledged as that of fortune." This is very true; and it is a pity that it is; but whatever is really meritorious in people is rarely allowed to exist altogether unheeded and unappreciated.

It seems to be natural for people to become stratified and for the stratification to be in accordance, for the most part, with the amount of material means at their command. At any rate turn where one may and it will be found that grades in society are recognized. This is, doubtless, to some extent well; but it is an evil when it produces pronounced unfriendliness of one to another. Political equality is established by law, but social equality is not and cannot be. But good sense should lead every one to entertain kindly feelings for his fellow-men, no matter what their condition in life may be. I hold, therefore, that it is wrong for parents to teach their children to regard any one with dislike; they should foster in them an unbiased love of humanity.

To envy those who are richer than ourselves is a common failing. Many imagine that wealth can make life delightful. This is a false notion. The happiest people in the world are those who can and do live comfortably by honest toil. To them Nature generally accords two incomparable gifts, health of body and peace of mind. Well would it be for children could they be made to realize the meaning of these truths.

It is very foolish for the poor to imitate the rich in their ways. This is a common cause of the continuation of poverty. Legions are in beggary to-day who may justly attribute their condition to the fact that it has been their custom to strive to seem and to do "like others," or in other words like those better off than themselves. Possessed of such ideas it is impossible for a person of small income to ever accumulate anything. It was said by one of the ancient philosophers (Aristotle), "A man may become rich by being poor in desires;"

and by another (Socrates), "People of small fortune if they know how to economize will be reckoned among the rich."

For persons of limited means to encourage their children to dress and to spend money like those of the affluent is a very serious error. Those who are thus treated are apt to remain poor all their lives; and having extravagant tastes it is well if they do not resort to criminal practices in order to satisfy them.

GAMES AND AMUSEMENTS.

A fondness for games and amusements is natural to the young. In the evenings, or at any time when they have nothing in the way of a duty to attend to they are prone to seek for some means of pleasurable mental excitement. This fact is one which should not be lightly considered.

Parents err greatly when they fail to do all in their power to make their home an interesting place to their children. The young will seek pleasure elsewhere if it cannot be found under the parental roof. Experience undoubtedly proves that people of puritanical ideas may almost count on having wayward families. Evidently the lesson to be drawn from this is that children should be encouraged to indulge freely in innocent games and amusements at home. This place should be made for them what Montgomery would have it to be—

"The spot of earth supremely blest,
A dearer, sweeter spot than all the rest."

I will now make a few remarks on each of a number of games and amusements, taking them up in alphabetical order.

BACKGAMMON is an interesting game. In playing it there is room for the exercise of considerable thought. I believe it is not objected to by even the strictest moralists.

BAGATELLE-PLAYING is a pleasant pastime and is in no way objectionable if it be engaged in at home. The cost of the table stands in the way of its popularity. It is in hotels and club-rooms that it is played mostly.

BILLIARDS, as a game is very similar to bagatelle, but it calls for more skill to play it well. From the fact that neither of them can be engaged in readily at home it is unwise to generate a taste for them in the young.

CARD-PLAYING has been long practiced but never more perhaps than at present. The number of distinct games of cards which there are is very great; and while some of them are wholly of a chance nature others call for active exercise of the intellectual faculties. EUCHRE is the most popular one in at least many parts of the Union. It is simple and may be played without much mental effort. WHIST is probably the best game of all. To play it well one must keep the intellect in action. The element of skill pertains in a much greater degree to it than to euchre. OLD-MAID and allied games are easily learned and are enjoyed greatly by children.

Now, I am aware that there are still some people who are totally opposed to card-playing in every form; but I do not know of any weighty reason which can be brought forward against it. Of course, it is possible to waste time at it, which is a serious matter, for as was remarked by an ancient philosopher (Theophrastus), "time is the most valuable thing a man can spend;" and it is also possible to turn it into a species of gambling. But these are abuses. I condemn as heartily as any one the misuse of it. Dr. Johnson regretted that he had not learned to play and remarked of it that "it is very useful in life; it generates kindness and consolidates society." The most sanctified can take part occasionally in a game of euchre, or of whist to their advantage. Certainly, children may pass their idle hours in a much worse way.

CHECKERS or DRAUGHTS is one of the very best and most fascinating of games. Playing it is a capital intellectual exercise; indeed I am not acquainted with any better means of mental discipline. The attention is kept alive and at every move the reasoning faculties are brought into use.

CHESS is one of the oldest and, perhaps, the best of games of skill. All that I have said of echeckers is still more emphatically true of it. Taking the vital part of education to be the improvement of the powers of the mind it is assuredly among the most efficient of all educational means. It is not as attractive to the young as to persons advanced in life; still a taste for it may be developed early.

CONCERTS of various descriptions are popular forms of amusement. For the most part they are wholesome in their effects. Of course, I do not at all approve of the entertainments of this kind given in saloons and other places where intoxicating beverages are sold. These should be shunned, abhorred; they are wiles by which thousands are led to form intemperate habits.

DRAMATIC OR THEATRICAL PERFORMANCES are attractive to people of all ages, but more particularly to the young. In cities and towns the number who spend their idle hours in attendance on them is very great.

Now, some moralists utterly condemn theatres. This is wrong. A properly conducted theatre is beneficial in its influence; it may afford both amusement and instruction to a community. It must be confessed, however, that the effects of most theatres are bad. The managers of them have no other desire, as a rule, than to attract the people; and in order to do this they do not hesitate to pander to depraved tastes. Multitudes of the young are ruined by them.

LECTURES are mostly intended to be instructive as well as to some extent amusing. In them, of course, there is plenty of room for choice. Attending the better class of them is apt to be advantageous to the young.

OPERATIC PERFORMANCES are generally speaking unobjectionable forms of entertainment. Boys and girls who have gained some knowledge of music may be greatly benefited by an occasional attendance at them.

CHAPTER VI.

THE CULTURE OF THE RELIGIOUS SENTIMENTS.

Preliminary Remarks—Sunday-schools—Religious Societies—Sundays and Week Days—Prayer.

PRELIMINARY REMARKS.

As the reader, probably, has observed I have treated, in the course of what precedes of this section of the book, of the mental culture of children as individuals and as members of society. It yet remains for me to speak of the mental culture of them as beings who have spiritual relations.

The essential fundamental principles of religion may be pointed out in a few words, and that they have a substantial basis is scarcely doubtful.

Now, it is impossible for any thoughtful person to contemplate Nature without being filled with a feeling at least akin to wonder. The human mind is finite and is consequently unable to fathom the structure and working of the illimitable universe. Space, time, and the origin of things may each be thought of but can never be comprehended. But it is hardly conceivable that the world with all therein and the myriads of worlds which are in view arose as they are out of nothing, of themselves. Hence it is very natural for mankind to entertain a belief in the existence of a Creator. Then, when one turns the attention inward and consults the longings of the heart it is easy to form the idea that man is destined to be immortal and to live hereafter in a more blissful world than this. And a glorious idea it is! As the good Vicar of Wakefield says in his splendid sermon, "if already we are happy it is a pleasure to think that we can make that happi-

ness unending. And if we are miserable it is very consoling to think that there is a place of rest." When one appeals to cold reason, however, and asks whether or not it is absolutely known that there is a Creator and that man is destined to be immortal the reply which is evoked is not definite. But if it be granted that the Bible is a credible revelation an affirmative answer may be given to each of the questions.

In the nature of things it is irrational to deny that there can be a Supreme Being ; , because man's knowledge is very limited. It is well remarked in "The Book of Wisdom," "Hardly do we guess aright at the things that are upon earth and with labor do we find things that are before us. But the things that are in heaven who shall search out?" Until one knows everything it is impossible to say what does, or what does not exist.

Some philosophers deny very emphatically that man has in him an immortal animating principle, an undying spirit. They hold that he closely resembles other creatures and that he has no more reason to expect immortality for himself than for the rest. But even that they are right there is still plenty of room for hope. In his admirable essay on the influence of physical causes upon the moral faculty, that Christian and philosophical physician, Dr. Rush, observes, "The immortality of the soul depends upon the will of the Deity and not upon the supposed properties of spirit. Matter is in its own nature as immortal as spirit. It is resolvable by heat and mixture into a variety of forms ; but it requires the same Almighty hand to annihilate it that it did to create it."

From the preceding remarks it would seem to be certain that there are good grounds for the existence of a system of religion or a body of sentiments in regard to the Creator and our relations to Him and to the life which is to come.

Which one of the numerous religions which there are is the true one, or whether or not there is a true one no man can

tell positively. Suffice it to say that the vast majority of the people of our country believe that the true one is Christianity in some form. But the views of different sects of Christians are markedly unlike in many respects. Hence there is reason why there should be great toleration in respect to religion. No one can well be justified in saying of every one who does not believe exactly as he does that "without doubt he shall perish everlastingly."

Every religion, to be productive of good temporally at least must have incorporated with it sound moral principles. Beliefs in regard to purely religious matters may have little to do with the conduct. It is of no importance what a man's religion is if he do not act properly. Virtue and vice are matters of action and not of opinion. Therefore, it should be remembered in teaching religious tenets to children that it is vitally important to see that their conduct every day of the week is in accordance with them.

A due regard for matters of a religious character is commendable in people of every age. A person who is satisfied to live and die without turning his attention in a reverent spirit to the relations which he holds to the Deity and to his future state is not in a proper frame of mind. It is right, then, to teach children to be pious, to a degree.

It is easy to abuse the sentiment of piety. There are thousands of people who are rendered miserable by superstition. This morbid condition of the mind is usually a result of ignorance. As the intelligence increases one is apt to learn that many of his former conceits were entirely imaginary. And in this connection I may say that it is too generally forgotten in giving religious instruction to children that their minds are not sufficiently developed to even moderately appreciate the meaning of any but the more practical part of it. Trying to teach them abstract truths which the average adult can but faintly comprehend is calculated simply to confound, to be-

wilder them. Religious, like every other species of education, should be progressive.

Fear may be an element of religious feeling but it is irrational to cultivate it with ardor. It is nothing short of criminal to frighten children by picturing to them in exaggerated language dreadful things which are in store for those who will not entertain certain beliefs, or follow certain precepts. Sermons on the uncertainty of life, on death, and on the punishment which lost souls are held to be subjected to are extremely harmful to the young; they are productive of depression and misery. Nor do they excite good ideas, or resolves. Self-abasement is not a virtue under any circumstances.

Love is, or should be the chief sentiment aroused by all religious teaching. A person who keeps in the path of virtue simply because he fears the consequences of vice is not righteous at heart. The truly virtuous are those who are devoted to virtue for its own sake. This is also true in respect to all matters of religion. The attachment to good and to all that is good which is not inspired by love is not of much account. A mind that is free from unholy ideas and that contains no holy ones is a blank. Only those who have a positive fondness for sacred things can be justly regarded as to any degree pious. If the instruction in regard to the Supreme Being which is given to children does not lead them to voluntarily yield thanks and praise to Him there need be no hesitancy in holding that it is not of the right sort.

SUNDAY-SCHOOLS.

Precisely one century ago, that is, toward the end of June, 1780, a benevolent printer and journalist, Robert Raikes, of Gloucester, England, being impressed with the idea that Sunday-schools would prove of great service to children whose moral and religious as well as general education was neglected

by their parents, proceeded to carry it into application. Looking about for teachers he was directed by a friend to four women who kept every-day schools. "To these," says he, "I applied and made an agreement with them to receive as many children as I should send upon the Sunday." His efforts were so successful that within five years there were thousands of schools throughout the kingdom with about a quarter of a million of pupils; and in 1811, the date of his death, there were great numbers of them everywhere. The teachers at first were paid but soon there was no difficulty experienced in getting plenty to serve gratuitously. At the beginning the churches had nothing to do with the movement, but becoming interested in it they in time became the chief promoters of it. At present it is almost exclusively in their keeping. Under their management the schools gradually ceased to be principally to afford the rudiments of education to neglected children; religious instruction became the leading aim. Then the young in general were gathered into them. The greater portion of the rising generation in all Christian countries now come under their influence. They are regarded as nurseries of piety and religious enlightenment and no Protestant church at least is considered complete without it has one in connection with it. And they are not only conducted with talent and energy but are more or less united in their plans and efforts. Since 1872 the passages of the Bible studied in nearly all those attached to Protestant churches in every part of the world have been alike, week after week. The selections are made by an international committee of distinguished divines.

That the Sunday-school is the means of doing much good is admitted by, perhaps, all. As remarked in a paper of the day "it keeps the children out of mischief. It fosters in them a wholesome development of the social element in their nature. It gives them a more or less intimate acquaintance with Bible-truth. And it brings the church and the home

together in a way that shows that 'a little child shall lead them.'" It certainly to some extent relieves parents of the duty of giving religious instruction. But it is not well that this should be markedly the case. Shifting such responsibility largely from their shoulders is apt to lead to great neglectfulness.

I need scarcely remark that in all Sunday-schools the instruction given is largely of a special kind; a religion is taught. Still the major portion of it is of a general nature. But, of course, all parents desire that their children should be trained so as to be similar to themselves in religious faith. One cannot blame them for this, even that their doctrines and creeds are far from being free from errors. However, it is more than probable that not enough consideration is given in most Sunday-schools to the conduct. Yet as hinted above mere beliefs in respect to abstruse matters may not be of much practical significance; they may have but little to do with action. What a child needs most is to be taught to live in harmony with moral principles.

It is well, I believe, for parents to send their children to a Sunday-school, even that the instruction given is not entirely in accordance with their views; for they cannot help learning much that is calculated to make them better in every way.

RELIGIOUS SOCIETIES.

Of late years societies, under different names, for religious and other instruction and general improvement have been growing fast in popularity. They are gotten up mainly, perhaps, for the good of boys and young men; but there are many which are carried on in the interest of the young of both sexes. For the most part they exist in connection with churches, but there are not a few which are entirely independent of any such alliance. The numerous Young Men's Christian Associations which are scattered throughout the land belong to the latter class.

Now, these institutions are of great advantage to the rising generation. It is impossible to be an active member of one of them without profit to the religious, intellectual, social and all other elements of the mental nature. They are schools of a very practical character. I commend parents to induce their sons and daughters to become members of one, or more of them.

SUNDAYS AND WEEK DAYS.

In almost all civilized parts of the world it is customary for people to refrain from labor on one day of every seven. Wherever the Christian religion prevails Sunday is the one which is thus honored; and it is also viewed as holy, as the Lord's day.

Now, it is wise to rest from toil every seventh day. Experience has shown that it is bad for both man and beast not to do this, that without an occasional period of relaxation health and strength are apt to soon become undermined. Some years ago Dr. Edward Smith made a long series of experiments as to the quantity of food consumed, the amount of the excretions and the weight of the body, which went to show that during the course of each week of hard, regular work the appetite gradually lessens, the power of digestion and the use of food diminish and the weight decreases. The rest received on Sunday tends to improve the appetite and digestion, to increase the consumption of food and to augment the weight. Similar results have been observed in horses and other animals which are forced to labor. No further evidence than this is needed to prove that on the score of health alone it is wise for man to have a day of rest weekly and to see that his beasts of burden likewise have one.

As to how the weekly day of rest should be spent there is much difference of opinion. This is due mainly to the bias of thought produced by the religious views. A person who holds that it is not a human institution and that instead of

being set apart for the temporal good of man it is solely for the glory of God is not likely to spend it similarly to one who is opposite or almost so in his beliefs in regard to it. During it the former inclines to engage in pious meditations, prayers, praise and allied exercises; while the latter inclines to act in no fixed way. But no one can, or should spend the day in a state of complete repose. As the author referred to above says, "a moderate degree of action on the Sunday is necessary to obtain relief for the mind and to discharge our religious duties. And he who sleeps away Sunday may as much abuse the day as he who spends it in running hither and thither in pursuit of pleasure. A proper discharge of the special duties of the day associated with observation of the works of Nature and reflection in country fields and pure air when such is conveniently practicable seem to be that which is most conducive to health of body and mind. Tennyson sings—

' On to God's house the people press'd ;
 Passing the place where each must rest,
 Each enter'd like a welcome guest.

* * * * *

And forth unto the fields I went,
 And Nature's living motion lent
 The pulse of hope to discontent.' "

The idea that it is wicked, that it is displeasing in the sight of God, to indulge in any form of recreation, to have any concern for the bodily and mental welfare on it, is no longer entertained by many. One may be pious without "mortifying the flesh;" one may glorify God and at the same time pursue wholesome pleasure. Nor is work less good in itself on one day than another, any more than is the motion of the earth around the sun, or on its axis, or the growth of living things, or the song of birds. What it is wrong to do on the first it is wrong to do on the second day of the week and what it is right to do on the second it is not wrong to do on the

first. If it is not a sin for me to go into my garden and enjoy the beauty of the flowers this morning it was not so on Sunday morning. The notion that deeds are rendered either better or worse in themselves by being done at any time more than another is of evil import, and the person who is satisfied to abstain from wickedness and to worship God only on one day of every seven has no reason to congratulate himself on his sanctity.

Of course, no one will infer from the remarks which precede that I do not hold it to be wise for people to be specially mindful of spiritual matters on the day of rest. Apart from any other consideration one can recuperate his physical and mental powers just as well, as a rule, in going to church and performing the various acts of worship as in any other way.

The manner in which children spend the Sabbath day should receive the careful attention of parents. If they are not taught to be piously inclined on it there is danger that they will contract habits which will not be profitable to them in after life.

PRAYER.

The belief that there is an Almighty Power that watches over and controls everything in existence, including matters pertaining personally and otherwise to man, inspires people to pray or offer up petitions for favors. Whether or not there is a solid foundation for this practice is questioned by some. Patient, intelligent observation indicates that all material things are subject to laws which are unchangeable and that all manifestations in Nature arise from natural causes. The planets and other heavenly bodies move in such an orderly way that events connected with them can be predicted for thousands, nay, for any number of years ahead; and the lightning, the winds, the various diseases and indeed almost all other things which in former days were believed to be under direct supernatural direction are now known to be

invariably, wholly and exclusively in all relating to them dependent on natural conditions. An unnatural occurrence however slight it may be is a miracle; but in accordance with all scientific knowledge, with the aggregate wisdom of modern times no miracle ever takes place. As Mr. Emerson remarks, "there is no chance and no anarchy in the universe; all is system and gradation."

Now; the doctrine of order or fixity in the affairs of creation would seem at first view to lead one to set aside prayer as vain; but such is not the case; it merely leads one to offer up petitions for favors of a spiritual character only. I can believe in it firmly and yet pray fervently for a loving heart, pure ideas, good intentions and so on, or in other words that I may become like the Power whom I petition, that I may live in harmony with the will of the Deity. In a little book on self-culture an Edinburgh Christian professor (Blackie) writes, "In the moral world it is not knowledge but aspiration that is the moving power; and the wing of aspiration is prayer. Where aspiration is wanting the soul creeps; it cannot fly; it is at best a caged bird curiously busy in counting and classifying the bars of its own confinement. Of course, we do not mean that any person should be so full of his own little self and so ignorant of the grandeur of the universe as to besiege the ear of Heaven with petitions that the laws of the universe shall be changed any moment that may suit his convenience. We do not pray that we may alter the Divine decrees, but that our human will may learn to move in harmony with the Divine will."

There is plenty of need for prayer of the right kind, for soul-aspiring; it may be indulged in "without ceasing" to one's gain in all personal concerns. I cannot bend my knee, look heavenward and yearningly ask God to fill my heart with love without feeling well disposed toward everything around me; I cannot ask Him for pure ideas without turning

my attention from things evil; I cannot ask Him for good intentions without resisting a tendency to wrong-doing. As Tennyson makes the hero of his poem *Morte D'Arther* remark—

“ More things are wrought by prayer
Than this world dreams of.”

A habit of prayerfulness formed in childhood and kept up through after life is a means of good to every one. Let the wishes be right and it is hardly possible for wrong to be done; and strengthened by an appeal to the Almighty for support, sanctified desires and aspirations are rarely doomed to have existence for naught. It is a duty, then, for parents to teach their children to pray, and to pray aright; but even that they are taught to ask for some favors which in the nature of things cannot be granted no harm is likely to result.

FINIS.

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